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Service

# Soil Survey of Mount Rainier National Park, Washington





# How To Use This Soil Survey

## General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

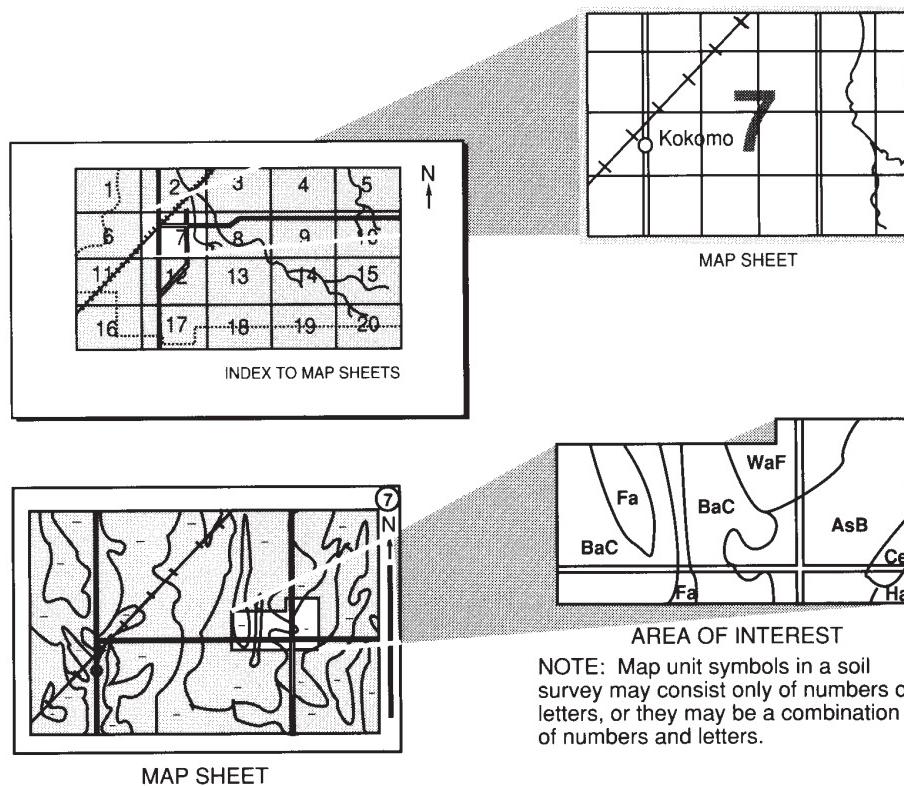
## Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



## National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service and the National Park Service.

Major fieldwork for this soil survey was completed in 2013. Soil names and descriptions were approved in 2014. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2014. The most current official data are available at <http://websoilsurvey.nrcs.usda.gov/app/>

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

## Citation

The proper citation for this soil survey report is as follows:

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### **Cover Caption**

View from Spray Park, looking southeast over Echo Rock and Observation Rock to Liberty Cap, on Mount Rainier.

*Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at <http://www.nrcs.usda.gov>.*



# Contents

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<b>How To Use This Soil Survey .....</b>	i
<b>Declarative Statements .....</b>	ii
<b>Contents .....</b>	v
<b>Foreword .....</b>	xi
General Nature of the Survey Area .....	3
History and Development.....	3
Geology.....	4
Climate .....	11
How This Survey Was Made .....	16
<b>Formation of the Soils.....</b>	23
Climate .....	23
Organisms.....	25
Topography .....	26
Parent Material.....	28
Time .....	29
<b>Classification of the Soils.....</b>	31
Soil Series and Their Morphology .....	32
Arahustan Series.....	32
Burroughs Series .....	34
Carbon Series .....	35
Chenuis Series.....	37
Comet Series .....	39
Flett Series .....	41
Frogheaven Series.....	43
Ghost Series .....	45
Glacierisland Series .....	47
Goldenlakes Series .....	49
Ingraham Series.....	51
Ipsut Series .....	52
Kautz Series.....	53
Laughingwater Series .....	55
Littlelahoma Series .....	58
Longmire Series .....	59
Meany Series .....	61
Mountwow Series.....	62
Mysticlake Series .....	65
Narada Series .....	67
Ohanapecosh Series.....	69
Owyhigh Series .....	71
Sarvant Series.....	73
Sheepskull Series .....	74
Sluiskin Series.....	76
Summerland Series.....	77

## Soil Survey of Mount Rainier National Park, Washington

Sunbeam Series.....	79
Tamanos Series .....	81
Tatoosh Series .....	82
Tipsoo Series .....	84
Tokaloo Series.....	86
Unicornpeak Series.....	88
Vantrump Series.....	90
Wahpenayo Series.....	92
Williwakas Series .....	94
Wonderland Series.....	96
<b>General Soil Map Units .....</b>	<b>99</b>
Soils of Flood Plains and Terraces.....	101
1. Riverwash-Comet-Carbon (Frigid Alluvial Soils) .....	101
2. Flett-Riverwash-Narada (Cryic Alluvial Soils).....	102
Soils of Coniferous Mountain Valleys.....	102
3. Tokaloo-Kautz-Sunbeam (Frigid soils) .....	102
4. Laughingwater-Longmire-Vantrump (Low Cryic Soils).....	103
5. Mysticlake-Unicornpeak-Tipsoo (High Cryic Soils) .....	104
Soils of Coniferous Mountain Slopes .....	104
6. Kautz-Goldenlakes-Tokaloo (Frigid Soils).....	104
7. Longmire-Arahustan (Low Cryic Soils).....	105
8. Owyhigh-Tipsoo (High Cryic Soils).....	105
Soils of Deciduous Mountain Slopes.....	106
9. Summerland (Cryic Soils) .....	106
Soils that Formed under Subalpine Meadows.....	106
10. Mountwow-Williwakas-Wahpenayo (High Cryic Soils) .....	106
11. Burroughs-Chenuis-Sarvant (High Cryic Soils) .....	107
Soils of Recently Deglaciated Terrain .....	108
12. Wahpenayo-Sarvant-Mountwow, Alpine Phases (Alpine Soils) .....	108
13. Glacierisland-Tamanos-Rubbleland, Till (Cryic Soils) .....	108
Areas that Are Dominantly Miscellaneous Land Types .....	109
14. Rubbleland, Talus-Rock Outcrop.....	109
15. Glaciers-Rock Outcrop (Volcanic Cone) .....	109
<b>Detailed Soil Map Units.....</b>	<b>111</b>
Descriptive Soil Map Unit Legend .....	112
Detailed Soil Map Unit Descriptions.....	118
6100—Riverwash-Comet complex, 0 to 15 percent slopes .....	118
6101—Comet-Carbon complex, 0 to 20 percent slopes.....	119
6110—Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes .....	121
6120—Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes .....	123
6125—Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes .....	126
7100—Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes.....	129
7110—Kautz-Goldenlakes complex, 35 to 100 percent slopes .....	131
7120—Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes .....	133
7125—Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes.....	135
8100—Riverwash-Flett complex, 0 to 25 percent slopes .....	138
8101—Flett-Narada complex, 0 to 25 percent slopes .....	139
8110—Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes ...	141
8120—Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes ...	144
8125—Vantrump-Laughingwater-Longmire complex, 10 to 65 percent slopes.....	147
8130—Summerland-Longmire complex, 15 to 100 percent slopes.....	150
8150—Ghost-Frogheaven complex, 0 to 10 percent slopes .....	152

Soil Survey of Mount Rainier National Park, Washington

8200—Riverwash-Flett, cold complex, 5 to 50 percent slopes .....	154
8201—Mysticlake-Unicornpeak-Williwakas complex, 0 to 40 percent slopes ...	155
8203—Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes.....	158
8210—Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes .....	161
8211—Owyhigh-Mysticlake-Williwakas complex, 0 to 50 percent slopes.....	164
8220—Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes .....	166
8225—Mysticlake-Unicornpeak-Tipsoo complex, 10 to 55 percent slopes .....	169
8230—Summerland-Tipsoo complex, 15 to 100 percent slopes .....	172
8250—Ghost-Williwakas-Mountwow, moist complex, 0 to 20 percent slopes ...	173
8251—Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes.....	176
8252—Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes...	178
8255—Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes .....	182
8256—Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes...	184
8257—Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes....	188
9100—Arahustan-Ohanapecosh-Longmire complex, 15 to 100 percent slopes.....	190
9101—Ohanapecosh-Arahustan-Summerland complex, 20 to 100 percent slopes.....	193
9110—Longmire-Arahustan complex, 35 to 100 percent slopes .....	195
9120—Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes .....	197
9125—Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes.....	200
9200—Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes.....	203
9201—Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes .....	205
9210—Tipsoo-Owyhigh complex, 35 to 100 percent slopes.....	208
9220—Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes.....	210
9225—Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes.....	212
9250—Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes.....	215
9251—Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes .....	217
9252—Littletahoma-Burroughs-Mountwow, moist complex, 20 to 100 percent slopes.....	219
9253—Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes.....	222
9254—Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes.....	224
9255—Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes ...	227
9256—Chenuis-Sarvant complex, 25 to 100 percent slopes.....	230
9257—Littletahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes.....	231
9258—Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes.....	234
9259—Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes .....	236
9260—Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes .....	239
9261—Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes ...	241
9262—Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes ...	244
9263—Tamanos-Glaciers complex, 10 to 65 percent slopes .....	246
9993—Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes ...	247
9994—Rubbleland, till-Glacierisland-Wonderland complex, 15 to 100 percent slopes.....	248

9996—Glaciers-Rock outcrop complex, 15 to 100 percent slopes .....	250
W—Water .....	251
<b>Use and Management of the Soils .....</b>	<b>253</b>
Interpretive Ratings .....	253
Rating Class Terms .....	253
Numerical Ratings .....	254
Land Capability Classification .....	254
Prime Farmland .....	255
Hydric Soils .....	255
Vegetation .....	256
Forestland Ecological Sites .....	258
Rangeland Ecological Sites .....	272
Land Management .....	280
Planting and Soil Rutting Hazard .....	281
Hazard of Erosion and Suitability for Roads .....	281
Site Preparation .....	281
Site Restoration .....	282
Recreational Development .....	282
Camp and Picnic Areas .....	282
Trail Management .....	283
Sanitary Facilities .....	283
<b>Soil Properties .....</b>	<b>287</b>
Engineering Soil Properties .....	287
Physical Soil Properties .....	288
Chemical Properties .....	290
Total Soil Carbon .....	291
Water Features .....	291
Soil Features .....	292
<b>References .....</b>	<b>295</b>
<b>Glossary .....</b>	<b>301</b>
<b>Tables .....</b>	<b>329</b>
Table 1.--Temperature and Precipitation .....	330
Table 2.--Taxonomic Classification of the Soils .....	332
Table 3.--Acres/Hectares and Proportionate Extent of the Map Units .....	333
Table 4.--Detailed Soil Map Unit Legend .....	335
Table 5.--Component Legend .....	336
Table 6.--Land Capability Classification .....	344
Table 7.--Hydric Soils .....	354
Table 8.--Common and Scientific Plant Names by Common Name .....	360
Table 9.--Common and Scientific Plant Names by Plant Symbol .....	362
Table 10.--Rangeland Ecological Site and Vegetation .....	364
Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation .....	381
Table 12.--Component Setting, Parent Material, and Ecological Site .....	419
Table 13.--Planting and Soil Rutting Hazard .....	450
Table 14.--Hazard of Erosion and Suitability for Roads .....	462
Table 15.--Site Preparation .....	472
Table 16.--Site Restoration .....	483
Table 17.--Camp and Picnic Areas .....	492
Table 18.--Trail Management .....	505
Table 19.--Sewage Disposal .....	517
Table 20.--Laboratory-Sampled Pedon Information .....	548
Table 21.--Engineering Properties .....	550

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties .....	674
Table 23.--Chemical Soil Properties .....	722
Table 24.--Total Soil Carbon .....	753
Table 25.--Water Features .....	760
Table 26.--Soil Features .....	825

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# Foreword

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This soil survey was developed in conjunction with the Inventory and Monitoring Program of the National Park Service. It serves as the official source document for the soils in Mount Rainier National Park, Washington.

The survey contains information that affects current and future land use planning in the park. It includes predictions of soil behavior for selected land uses. The survey highlights soil limitations, actions needed to overcome the limitations, and the impact of selected land uses on the environment.

The survey is designed to meet the needs of the National Park Service and its partners. The information provides for a better understanding of the various properties of the soils in the park and their effect on various natural ecological properties. It can be used to help understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the park is described, and information on specific uses is given.

Although soil survey information can be used for local and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app>) or Mount Rainier National Park.

Roylene Rides at the Door  
Washington State Conservationist  
Natural Resources Conservation Service

Randy King  
Superintendent  
Mount Rainier National Park



# Soil Survey of Mount Rainier National Park, Washington

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By Toby Rodgers and Philip Roberts, United States Department of Agriculture, Natural Resources Conservation Service

Fieldwork by Toby Rodgers, Philip Roberts, and Kathryn Smith, United States Department of Agriculture, Natural Resources Conservation Service, and Sharon Brady, United States Department of the Interior, National Park Service

United States Department of Agriculture, Natural Resources Conservation Service,  
in cooperation with  
United States Department of the Interior, National Park Service

MOUNT RAINIER NATIONAL PARK is centered around an active volcanic peak in the Cascade Mountain Range, in western Washington State (fig. 1). Mount Rainier was named in honor of Captain Peter Rainier. It is the second highest and most glaciated peak in the conterminous United States, rising to an elevation of 4392 meters above sea level. The park consists of 95 231 hectares, covering the eastern portions of Pierce and Lewis Counties. It is approximately 100 kilometers southeast of Seattle, Washington, and is bounded by Mount Baker-Snoqualmie National Forest to the west and north, Gifford Pinchot National Forest to the south, and Okanogan-Wenatchee National Forest to the east (fig. 2). About 3 percent of the park is designated as a national historic landmark district and 97 percent is designated as wilderness. The park preserves a wild and rugged landscape in the Pacific Northwest.

Mount Rainier National Park receives approximately 2 million visitors per year. There are several readily accessible entrances to the park during the peak season in summer. The most widely used entrance is the Nisqually Entrance, along Washington



Figure 1.—Location of Mount Rainier National Park in Washington. Regional urban centers and major roads are shown for reference. (Map provided by National Park Service.)

Soil Survey of Mount Rainier National Park, Washington

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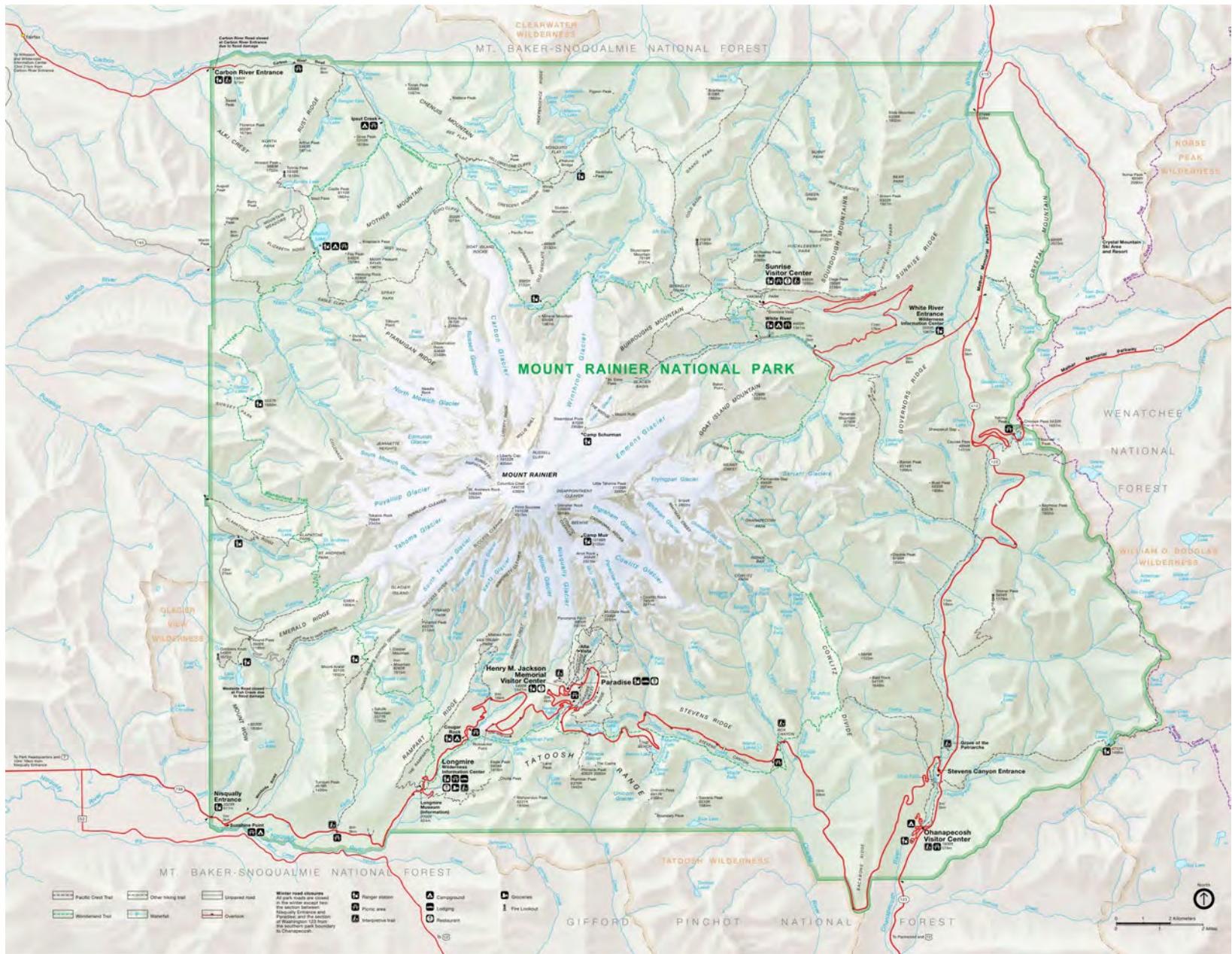


Figure 2.—Map of Mount Rainier National Park, showing major geographic features. (Map provided by National Park Service.)

State Route 706, at the southwest corner of the park. This is the only vehicle entrance that is open year round, and it is the main access to the Longmire and Paradise areas. Other entrances include the Mowich and Carbon River Entrances at the northwest corner of the park; the White River Entrance at the northeast corner and the Chinook Pass Entrance on the eastern boundary, both of which are along Washington State Route 410; and the Ohanapecosh Entrance, along Washington State Route 123, at the southeast corner.

A long and diverse geologic history has resulted in a variety of landforms, soils, and dramatic topography. Numerous waterways, including the Nisqually, Puyallup, Carbon, White, and Cowlitz Rivers, start their journey to the Pacific Ocean on the flanks of Mount Rainier. A complex mosaic of mountainous topography and varied climatic conditions produce a diverse regional ecology of temperate rainforests, mountain forests and meadows, and alpine parkland. The park also has a rich cultural history that spans thousands of years.

This soil survey is an initial soil resource inventory. No previous National Cooperative Soil Survey inventory of the soils in the park has been conducted.

## General Nature of the Survey Area

This section provides general information about Mount Rainier National Park. It discusses the history and development, geology, and climate of the park.

### History and Development

Mount Rainier National Park was established in 1899 as the Nation's fifth national park. The park provides a wealth of scenic, recreational, educational, and naturalistic opportunities for visitors from the largely urban population of Puget Sound. Activities include camping, hiking, fishing, climbing, wildlife viewing, bird watching, guided tours, and numerous interpretive and educational programs. The park offers a primitive wilderness experience in its backcountry, and numerous roadside exhibits and interpretive displays offer opportunities to learn about the region without traveling into the wilderness. The park was established "to preserve the area in a natural condition for the enjoyment of present and future generations" (Catton, 1996).

Visitation to Mount Rainier National Park has changed considerably since it was first established. Changing attitudes and goals of the public and park staff have shaped the administration of the park with respect to how visitors are accommodated. The annual number of visitors surpassed 2 million in the 1990's, and the majority of those visits were made by automobile. This high level of visitation presents challenges to the park administration and has demonstrated a need for understanding the natural resources of the park now more than ever before. The challenge is to balance conservation of the wilderness with management of visitation and recreation within the park boundaries.

Headquarters for Mount Rainier National Park are along Washington State Route 706, between the towns of Elbe and Ashford and approximately 16 kilometers west of the Nisqually Entrance. Ranger stations are at the Nisqually Entrance and in the Longmire, Paradise, Ohanapecosh, White River, Sunrise, and Carbon River areas. Visitor centers include the Henry M. Jackson Memorial Visitor Center at Paradise and those in the Ohanapecosh and Sunrise areas. Vehicle-accessible campgrounds are at Cougar Rock, Ohanapecosh, White River, and Mowich Lake.

## Geology

By Jon Riedel, Sharon Brady, and Stephen Dorsch, United States Department of the Interior, National Park Service.

### Geologic Setting

Mount Rainier is the largest peak in the Cascade Mountains, which extend from Mount Lassen in northern California to Mount Garibaldi in southern British Columbia. The bedrock geology of Mount Rainier, spanning about 56 million years, has been mapped at a scale of 1:62,500 (Fiske and others, 1963 and 1988). The base of the modern volcano overlies Tertiary (Eocene to Miocene) sedimentary and volcanic rock that was folded and intruded by the Miocene Tatoosh plutonic complex (Fiske and others, 1963). Development of the Mount Rainier volcanic cone likely began during the early or middle Pleistocene, and it is composed dominantly of intermediate magmatic material from oblique subduction of the Juan de Fuca Plate beneath North America (Crandell, 1963; Crandell and Miller, 1974). The following is a brief overview of the geologic history of Mount Rainier as summarized from Pringle (Pringle, 2008).

*55.8 to 43 million years ago (Ma)*—sediment deposited in marine basins and river deltas west of Mount Rainier.

*43 to 37 Ma*—earliest Cascade volcanoes begin to erupt, mainly mafic lavas, and form on a coastal plane.

*37 to 27 Ma*—sea level transgresses and pushes the coastline to the east. Another early Cascade volcanic arc begins to emerge further to the east. Silica content of lava increases, which raises the viscosity and explosiveness of the volcanoes.

*27 to 22 Ma*—volcanic activity increases.

*22 to 5 Ma*—volcanic activity slows or is otherwise not preserved in the rock record due to increased erosion from uplift. The Tatoosh pluton is emplaced (approximately 25 to 6 Ma). Columbia River Flood Basalt flows to the east of Mount Rainier (17.5 to 6.0 Ma). Dikes and sills intrude areas north and east of Mount Rainier.

*5 Ma into Holocene*—volcanic activity increases again. Approximately 2 to 1 Ma ancestral Mount Rainier begins to form, but it is subsequently eroded drastically. Modern Mount Rainier begins to form (approximately 500 thousand years ago (ka) to present day). Glaciation marks the late Holocene with the Hayden Creek glaciation (approximately 170 to 130 ka), the Evans Creek glaciation (approximately 22 to 15 ka), and the Neoglacial advances, which were most extensive during the Little Ice Age.

### Geologic Units

The oldest rock is the Eocene Puget Group of sedimentary rock. The sediment was deposited on a coastal plain and sandstone, siltstone, mudstone, claystone, and coal formed over a broad area west of Mount Rainier (Kiver and Harris, 1999). The beginning of the Oligocene was marked by an increase in volcanic activity as evidenced by the deposition of the approximately 3000-meter-thick Ohanapecosh Formation (35 to 28 Ma). This formation has clusters of subaerial and subaqueous volcanic deposits of breccias, lava flows, mudflows, and ashfalls interpreted to be from an environment of shallow-water deposition. The volcanic material is dominantly felsic to intermediate in silica content, but it also has replacement minerals, such as zeolites, that have altered the original mineralogy and color to dark gray and green. The area was uplifted and folded during the Oligocene, and large valleys were carved into the formation. During the upper Oligocene and lower Miocene, ashfalls and lava flows of the Stevens Ridge Formation were deposited with enough heat to fuse into welded tuff in some locations.

Also deposited during the lower Miocene and overlying the Stevens Ridge Formation is the volcanic Fifes Peak Formation, which includes andesitic and basaltic lava flows. Much of the flow deposits has been eroded, but feeder dikes and sills that were injected between strata of the Ohanapecosh and Stevens Ridge

Formations can still be observed. A period of compressional deformation folded and faulted the area enough to displace the basal strata of the Stevens Ridge Formation. The Tatoosh Pluton and associated dikes and sills were emplaced at the end of the Oligocene and during much of the Miocene (approximately 25 to 6 Ma). The Tatoosh rock is dominantly granodiorite that intruded the older Ohanapecosh and Stevens Ridge Formations. Much of this rock has been eroded from the surface, but it can be observed in the Carbon, White River, and upper Nisqually drainageways. Fiske and others suggest that Mount Rainier is underlain by the Tatoosh Pluton.

Ancestral Mount Rainier began to form during the upper Miocene and into the Pleistocene (7 to 2 Ma); however, most of the known eruptive history occurred during the upper Pleistocene to the present. During the Pleistocene, glaciers eroded large valleys into the landscape, which then filled with andesitic lava flows that are now some of the modern day ridges of Mount Rainier, such as Rampart Ridge (Fiske and others, 1988). New research suggests that some of the lava flowed between valley glaciers on ridgetops (Sisson and Lanphere, 1999).

Glaciation, volcanic eruptions, and lahar and debris flows mark the most recent geologic history of Mount Rainier. The modern Mount Rainier volcanic cone has been built up by overlapping layers of lava flow and tephra debris, and it may have reached its greatest height of approximately 4700 to 4900 meters during the upper Pleistocene (approximately 75 ka) (Harris and others, 1995). Holocene eruptive activity at Mount Rainier produced 11 pumiceous tephra layers, ranging in estimated volume from 0.001 to 0.3 cubic kilometer (Crandell and Mullineaux, 1967; Crandell, 1969a; Mullineaux, 1974). As many as 30 lithic-rich, vesicle-poor tephra layers have been identified (Vallance and Donoghue, 2000). The cumulative amount of tephra erupted in the past 10 ka is more than 0.5 cubic kilometer (Pringle, 2008). In addition to these tephra layers, ash from Mount Mazama (Crater Lake) and Mount St. Helens is widespread in the park (Mullineaux, 1974). A number of pyroclastic flows in the park have also been documented (Fiske and others, 1963 and 1988).

Many lahar and debris flow deposits have also been documented. The largest debris flow is the Osceola Mudflow, which occurred 5.6 ka. This mudflow transported about 3 cubic kilometers of debris at least 110 kilometers down the White River watershed. It deposited the material over areas in the Puget Lowland that are now heavily populated. Commonly, these debris and lahar deposits are interbedded with glacial deposits. The lahar and associated deposits of Mount Rainier are discussed in greater detail under the heading "Lahar."

### **Glacial History**

The long, complex glacial legacy of Mount Rainier National Park continues to be shaped by the massive modern glaciers that cover about 11 percent of the park. The 4392-meter height and broad shape of Mount Rainier supports a total of 26 large glaciers with a combined volume of about 18 cubic kilometers (Driedger and Kennard, 1986). These modern glaciers, however, are relatively small as compared to the large tongues of ice that filled the five major valleys in the park for most of the past several million years.

Glacial and volcanic processes have shaped the landscape of the park for the past several million years (Pringle, 2008). Glaciers undoubtedly preceded development of the modern Mount Rainier volcanic cone, which began about 500 ka (Sisson and others, 2001). Since that time, glaciers have continued to shape and be shaped by the mountain. The volcano was likely built on a volcanic and glacial landscape similar to the one surrounding the mountain today. It is now recognized that parts of many of the more recent intercanyon lava flows were between glaciers (Sisson and Lanphere, 1999). Lava flows, mudflows, pyroclastic flows, and collapses of portions of the volcanic edifice have also eroded or buried glacial deposits from early glaciations in the five main valleys in the park.

### Pleistocene

Based on studies of cores of polar ice and sea floor sediment, it is likely that there have been a dozen or more ice ages in the past 2.5 million years. The climate for most of this time was significantly colder than it is today. Prolonged periods of extensive glaciation, known as ice ages, led to development of small ice caps centered on Mount Rainier that covered as much as 80 000 hectares (Crandell and Miller, 1974). The ice caps fed 100-kilometer-long streams of ice that radiated from Mount Rainier west to the Puget Lowland. The ice on the steep sides of the mountain likely was 30 to 40 meters thick, and the ice accumulated from tributaries in the major valleys was several hundred meters thick. At some point, the ice cap was thick enough to spill south across the Tatoosh Range into Butler Creek (Crandell and Miller, 1974).

Along the way, the several-hundred-meter-thick glaciers cut long, straight, U-shaped troughs, leaving tributaries as hanging valleys. At the head of large valleys and on the flanks of the mountain, glaciers cut deep basins, called cirques, that had floors as low as 1200 meters in elevation. Many of the park's largest and deepest lakes are in these circular-shaped basins (e.g., Mowich, Tipsoo, and Louise Lakes) (Crandell and Miller, 1974). In alpine areas, glacial and freeze-thaw processes have removed hundreds of meters of rock and exposed the deeply buried Tatoosh granodiorite and other rock. The effect of ice erosion may limit the height of the nonvolcanic peaks in the Cascade Range (Mitchell and Montgomery, 2006).

While these erosional landforms were formed by repeated glaciation, deposits from several ice age glacial advances from Mount Rainier have been identified and roughly dated to specific events 700 ka (Crandell and Miller, 1974). Each major advance built a large terminal moraine with thick sand and gravel outwash that extends tens of kilometers downstream.

For the most part, moraines near and in the park can be correlated with those in the surrounding Cascade Mountains, including the Yakima and Wenatchee Valleys to the northeast (Porter, 1971; Porter and Swanson, 2008) and the Skagit Valley to the north (Riedel, 2007) and the western Olympic Mountains (Thackray, 2001). Because glaciers erode or bury older glacial deposits, however, the record for any one valley commonly is incomplete. Furthermore, older glacial deposits in the park are restricted to areas near the top of ridges, where they were not covered by later smaller glaciations and volcanic deposits.

In general, the earlier Pleistocene advances were more extensive than recent ones and terminal positions for all of the ice age advances are outside the park. Glacial deposits dated about 600 ka are included in the Lily Creek Formation, on the west flank of Burroughs Mountain, in Ohanapecosh Park, and in other areas. They are buried by more recent volcanic deposits, including lava flows, volcanic rubble, and lahar (Crandell and Miller, 1974).

The Wingate Hill glaciation, dated about 500 ka, extended 6 kilometers west of Mossyrock in the Cowlitz Valley and to Alder Lake in the Nisqually Valley. Soils that formed in the glacial deposits are highly weathered and have stones with rinds as much as 7 millimeters thick (Crandell and Miller, 1974). A large outwash plain composed of sand and gravel from this glaciation formed the Cowlitz Prairie, north of Toledo.

The Hayden Creek advance occurred between 170 and 130 ka, although the exact timing of this event is not well understood. This advance reached as far as the Wingate Hill advance in the major valleys and left a prominent terminal moraine just northeast of Ohop, Washington. Glacial till from this advance was observed on the top of Iron and Copper Mountains, in the southwestern part of the park. Glacial striations were observed at the summit of Mount Ararat at 1800 meters, which means that the ice cap was 900 meters thick (Crandell and Miller, 1974). Hayden Creek till can be observed in cuts along the road to Yakima Park and Sunrise.

The Evans Creek advance, named for a moraine near that creek in Carbon Valley, occurred during the Fraser Glaciation. The glacial deposits generally are weathered to a depth of about 1.2 meters, and the stones appear fresh and have thin, if any, weathering rinds. This advance was less extensive than the previous ones, but it still extended beyond the boundary of Mount Rainier National Park.

Most knowledge of the influence of large glaciers has been obtained from the study of deposits from the Fraser Glaciation. Two times during this glaciation, about 70 and 30 ka, alpine glaciers made major advances. It is likely, however, that glacial margins fluctuated by several kilometers during these general periods of ice buildup and during periods of general ice recession.

By about 30 ka, alpine glaciers throughout the region had extended as far as 60 kilometers from the valley heads (Porter, 1971; Crandell and Miller, 1974; Thackray, 2001; Porter and Swanson, 2008; Riedel and others, 2010). The Cowlitz Valley glacier was the largest on Mount Rainier during the last ice age, extending 67 kilometers from the present Cowlitz Glacier terminus. These long valley glacier systems remained in extended positions for most of the succeeding 15,000 years. They began to recede about 15 ka. During the next 2,000 years, alpine glaciers on Mount Rainier probably were extensive but they generally receded while fluctuating on a 1,000-year time scale.

Toward the end of the last ice age, a continental glacier from south-central British Columbia advanced to its maximum position about 17.5 ka (Porter and Swanson, 1998). At this time, the Cordilleran Ice Sheet was 500 kilometers long and more than 2.5 kilometers thick (Riedel and others, 2010). It blocked and altered the course of the Nisqually, Puyallup, Carbon, and White Rivers. Large deposits of sand and gravel across the mouth of these valleys east of Eatonville, Kapowsin, Enumclaw, and Wilkeson mark the former edge of the ice sheet (Crandell, 1969b; Waitt and Thorson, 1983).

Following rapid retreat of the ice sheet after 17 ka, an abrupt return to a colder global climate occurred about 13 ka. It was likely caused by the sudden drainage of massive glacial Lake Agassiz into the North Atlantic Ocean. This cold, dry climate triggered the McNeely advance of glaciers on Mount Rainier. At this time, glaciers generally reached 5 to 10 kilometers beyond the modern-day margins (Crandell and Miller, 1974; Heine, 1997). This advance was driven by a several-hundred-meter drop in the snowline that lasted for many centuries. Based on the existence of multiple moraines at most sites, there likely were several different glacial advances during a 1,500-year period (Riedel, 2007). An example is Mystic Lake, which was formed by a lateral moraine constructed by the Carbon Glacier that overtopped the divide and spilled into the West Fork White River (Crandell and Miller, 1974).

### **Holocene - Neoglacial**

Alpine glaciers at Mount Rainier generally retreated between approximately 11.5 and 8.5 ka. This warm, dry period likely left the glaciers slightly smaller than observed today, and it may have caused the demise of some of the small, low-elevation glaciers on the flanks of Mount Rainier, such as the Sarvant glaciers, small ice patches on Sluiskin Mountain, Flett Glacier, and small glaciers in the Tatoosh Range. The regional re-advance of glaciers after 7 ka is known as the Neoglacial Period, which is defined as a period of 'renewed growth of glaciers following a period of maximum (post ice age) shrinkage...' (Matthes, 1914). In an early summary of data for North America, it was suggested that three periods of glacial resurgence occurred during the Neoglacial period, including one about 4.6 ka, another 2.6 to 2.3 ka, and another in the past 800 years (Porter and Denton, 1967).

The Neoglacial period in the Pacific Northwest is characterized by the long-term advance of glaciers to positions within a few kilometers of the limits of the McNeely

Moraine, which was deposited 13 ka. Based on a regional compilation of data from other Cascade Range volcanoes, it seems clear that these advances were becoming larger for at least 7,000 years. This led to a glacial record on Mount Rainier, dominated by glacial moraines constructed in the last few thousand years.

On Mount Rainier, Crandell and Miller named the Neoglacial period the Winthrop Glaciation, which occurred about 3.5 ka and likely obliterated evidence of earlier Neoglacial advances (Crandell and Miller, 1974). The Winthrop Glaciation included the distinct Burroughs Mountain and Garda advances. Moraines from the earlier Burroughs Mountain advance are not widespread in the park, but Garda moraines enclose nearly every cirque and glacier.

The Burroughs Mountain advance generally coincides with the timing of major advances of alpine glaciers throughout western North America (Samolczyk and others, 2010). This advance climaxed about 2.6 ka in many areas in the United States. In the White River Valley, the Winthrop Glacier advanced to build a moraine 2.5 kilometers northwest of the summit of Burroughs Mountain (Crandell and Miller, 1974).

Dated moraines in western North America show that there were as many as seven or eight advances of alpine glaciers. The most extensive post ice age advance at Mount Rainier occurred during the Little Ice Age (Samolczyk and others, 2010). Crandell and Miller named this the Garda Advance. The major glaciers on the mountain advanced about 2 to 3 kilometers below modern termini. The Little Ice Age ended in the late 19th century, although the past century of overall retreat was punctuated by brief still stands or minor advances of the major glaciers from 1950 to the late 1970's.

Glaciers on Mount Rainier were undoubtedly affected by the numerous volcanic events of the past 8,000 years, including eruptions and edifice collapses. During eruptions, lava and hot pyroclastic flows would have resulted in massive melting of glacial ice that would have triggered mudflows in the major valleys. The Cowlitz (~7 ka), Osceola (~5 ka), and Summerland (~2.2 ka) eruptive periods produced tephra (volcanic ash) and other volcanic deposits that likely caused significant temporary destruction of glaciers during the Neoglacial period. Smaller eruptions produced ash that would have covered glaciers and slowed surface melting.

Glacial erosion during the ice age also likely contributed to the collapse of large sectors of the volcanic edifice, which produced the Osceola mudflow about 6 ka and the Electron mudflow about 500 years ago. These landslides incorporated glacial ice from the mountain and covered glacial deposits from the bottom of the White, Nisqually, and Puyallup Valleys to the Puget Lowland.

### Lahars

Lahars, or volcanic debris flows and their deposits, have occurred frequently over the past several thousand years on Mount Rainier (Scott and others, 1995 and 2001). Lahars can flow rapidly along valleys for significant distances, and they are considered a primary geologic hazard associated with Mount Rainier due to the increasing population centers along the lowland drainageways. Lahars also create extensive surficial deposits and landforms and directly influence soil formation and vegetation. More than sixty Holocene lahars have been identified on Mount Rainier. Many of these lahars are related to eruptive periods, and many are not.

Lahars on Mount Rainier can be divided into two distinct types—cohesive and noncohesive. Cohesive lahars are the largest ones on Mount Rainier. They are relatively rich in clay (more than 3 to 5 percent clay, or muddy). Clay-rich lahars commonly begin as volcanic landslides, the largest of which are referred to as sector collapses. These landslides shape the summit of a volcano, and they have been as much as 1 cubic kilometer in volume or more on Mount Rainier. Smaller slides, known as flank collapses, do not involve the summit of volcanos (Scott and others,

2001). These lahars can be high in volume. Examples are the Electron, Osceola, Round Pass, and Paradise lahars.

Noncohesive lahars (less than 3 to 5 percent clay, or granular) typically begin as a flood surge that incorporates sediment as it travels. There can be numerous triggers for these non-cohesive lahars, such as a glacial outburst flood on the steep volcanic cone, meteorological events (heavy rainstorms or rain-on-snow events), failure of a landslide-dammed lake, or interaction of a pyroclastic density current with snow and ice (Pringle, 2008).

Previous mapping by Crandell and Scott and others was used to delineate the surficial extent of lahar deposits in the park (Crandell, 1969a; Scott and others, 1995). These deposits typically flank the flood plains of rivers and have been incised and left as terraces. They are also interbedded with glacial deposits in lateral moraines.

### Landforms

Over the last 14 years, landforms in the park have been mapped by geologists (fig. 3) (Riedel and Dorsch, n.d.). Volcanic activity in the park spans 700,000 years, during which time there have been six or more periods of intense glaciation. Along with mass wasting and the action of rivers, these processes have created 33 distinct landforms.

The volcanic cone of Mount Rainier is dominant in the skyline of the park; however, steep valley walls are the dominant landform. Mount Rainier National Park is more than 50 percent valley walls, making up 483 square kilometers. The debris apron, which is the zone below the valley walls where colluvial material accumulates along with debris cones, makes up 12 percent of the park. The volcanic cone makes up 8 percent, or 76 square kilometers. The cone is mapped as the area immediately below the volcanic crater and above the valley walls at an elevation of about 2130 to 4325 meters. Glaciers cover most of the volcanic cone and descend into the major river valleys flanked by large Neoglacial moraines. There are 316 Neoglacial moraines on Mount Rainier, which is the highest number on any individual landform. The largest and most extensive formed during the Little Ice Age from 1450 to 1900 A.D. (Samolcyzk and others, 2010).

Many of the landforms in the park are of interest, including the river canyons, moraines, parklands, and terraces. Longmire, Cougar Rock, and White River campgrounds are on flat lahar terraces. Box Canyon, Stevens Canyon, and other deep gorges and waterfalls throughout the park are popular tourist attractions. Hundreds of towering moraines in most of the larger valleys and cirques provide clear evidence of the size and extent of the glaciers about 100 years ago. Parklands are also distinct features on Mount Rainier, and they cover about 30 square kilometers. These gently sloping surfaces of ancient lava flows have been scoured by glacial erosion during the ice ages. Parklands, such as Spray Park, commonly are adjacent to the volcanic cone. They can also extend outward on or near discontinuous ridgetops, valley walls, and debris apron benches and cirques, or they can stand alone, such as Grand Park. The vegetation on the parklands commonly is subalpine meadow. Some of these parklands, such as the Paradise and Sunrise areas, attract many visitors.

Rivers on Mount Rainier typically have large braided flood plains, which rise to an elevation of 1280 meters in the major river valleys and 1400 meters along the tributaries. Although there are numerous large flood plains, they make up only about 2.5 percent of the park. The transition from flood plain to valley bottom occurs at an elevation of 945 to 1280 meters throughout the park, with the valley bottom extending to an elevation of 1525 meters in areas where it merges with valley walls, debris aprons, and glaciers at the valley head. Determination of this transition is based on the width of the flood plain, the presence or absence of river terraces and gravel bars, and the stream gradient (Jarrett, 1990). The transition from the valley bottom

## Soil Survey of Mount Rainier National Park, Washington

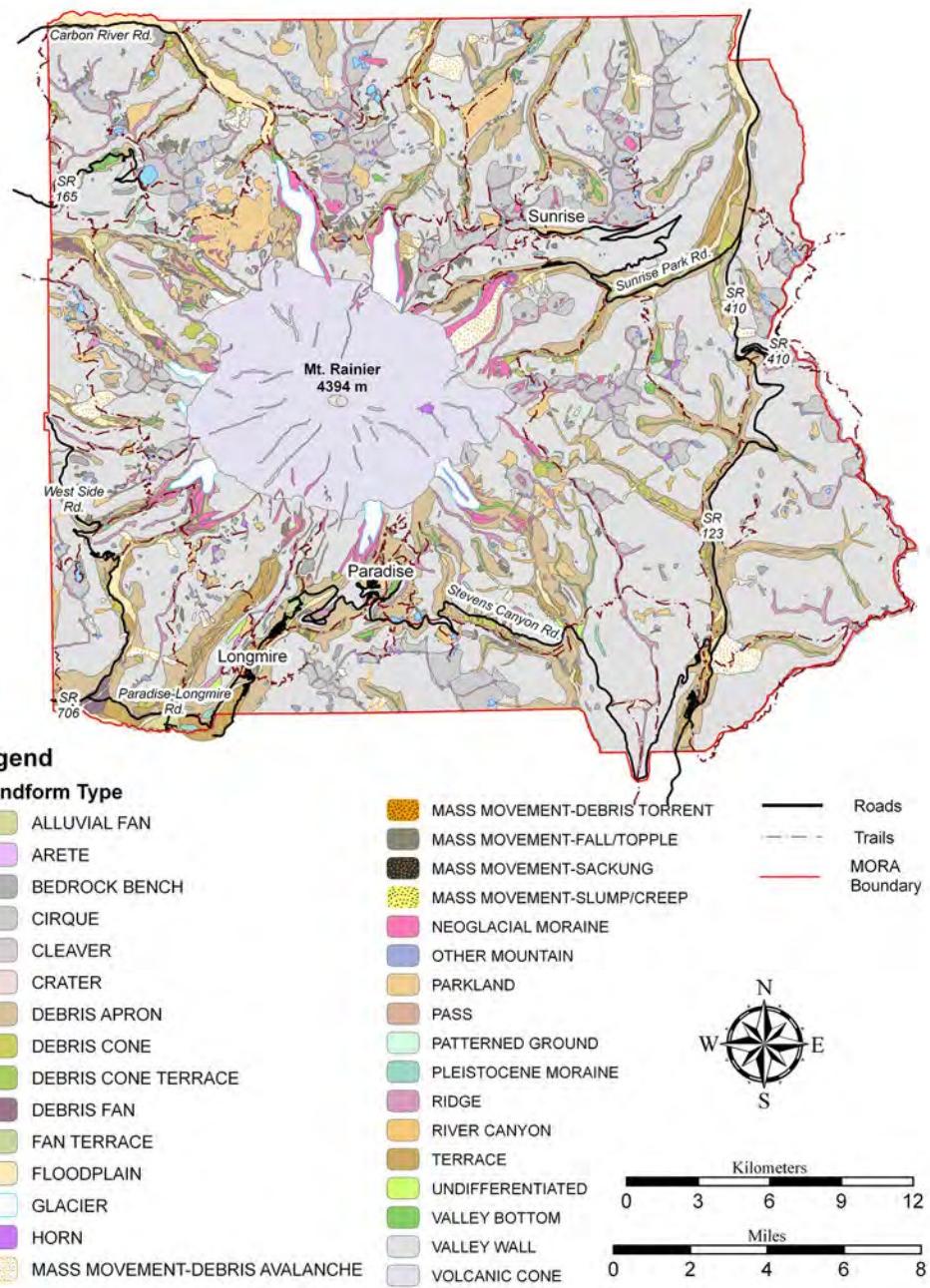


Figure 3.—Landform map of Mount Rainier National Park (Riedel and Dorsch, n.d.)

to the flood plain typically is below the extent of the Neoglacial moraines on Mount Rainier.

Several unique landforms have been mapped in the park, such as amphitheaters, volcanic cones, debris fans, patterned ground, and cleavers. Debris fans are most common at the confluence of two relatively large streams, such as Tahoma Creek and the Nisqually River, where the gradient of a stream abruptly decreases. These fans commonly are flanked by fan terraces, which are relict features that were deposited during glacial retreat following the last ice age or by ancient lahars. Patterned ground is a high-elevation landform characterized by symmetrical geometric shapes (Washburn, 1956). Patterned ground is near or above treeline on Mount Rainier.

The types of patterned ground most common in the park include sorted circles, sorted stripes, and nonsorted steps. These features likely formed as a result of repeated freezing and thawing of the ground (Crandell and Miller, 1974). Cleavers are sharp-crested ridges of volcanic rock that are distinctly exposed above the surrounding glaciers on the volcanic cone. They commonly are hydrothermally altered remnants of lava flows from Mount Rainier. Many of the cleavers were flanked with thick ice when they were constructed, and some contain glassy ice-contact features, such as the Success and Tahoma cleavers.

Landslides have played a very important role in the geologic history of Mount Rainier, from the overall shape of the volcano to the vast distribution of debris flow deposits. Landslides are almost continually altering the landscape of Mount Rainier. Large landslides, known as debris avalanches, are of particular importance because of their potential to block streams and deposit massive amounts of large woody debris and sediment in stream systems.

A large rain-on-snow event, known locally as a pineapple express, deposited about 1145 millimeters of rain on Mount Rainier in 24 hours on November 6 and 7, 2006. Numerous floods and landslides occurred throughout the park, causing such extensive damage to roads and facilities that the park was closed for the first time in more than 60 years. This storm was a reminder that this landscape is in a constant state of change.

## Climate

Mount Rainier National Park is characterized by a humid temperate climate. Topography and proximity to the ocean are the major influences on the regional climate. Maritime influence is substantial; tidewater is as close as 50 kilometers to the boundary of the park. The corridors provided by the Nisqually, Puyallup, and White River Valleys allow moist marine air to reach the lower flanks of the volcano. Proximity to the northern Pacific Ocean produces significant rain and snow. Precipitation falls mostly in winter; summers are relatively warm and dry. Temperatures are generally mild at the lower elevations, but they drop substantially as elevation increases.

Two semi-permanent pressure systems influence the local climate in the Cascade Range of Washington (National Oceanic and Atmospheric Administration, 2014). These pressure systems are known as the North Pacific High and the Aleutian Low, and each year they fluctuate in intensity and position over the northern Pacific Ocean and the Cascade Range. In summer, the North Pacific High migrates northward over the northern Pacific Ocean and Washington. This clockwise circulation brings relatively cool, dry marine air over Washington and the Cascade Range throughout summer.

Late in autumn and throughout winter, the Aleutian Low strengthens and migrates southward, producing a pronounced rainy season over the Pacific Northwest. This counterclockwise circulation produces a southwesterly flow of cold, moist marine air. The majority of the precipitation falls as snow over the Cascade Range, and the snowpack commonly is more than 2 meters deep at the higher elevations.

The Aleutian Low pressure system, proximity to the Cascade Crest, and local topography influence the distribution of precipitation in the region. Mount Rainier causes strong orographic effects that influence the local climate in the park. These effects contribute to a humid climate on the western slopes of the Cascade Range while the eastern slopes have a drier climate. Typical winter storms arrive from the south and west, producing a drier microclimate to the northeast of the mountain. Across the park, the annual precipitation ranges from 1240 to 4700 millimeters (fig. 4). It varies greatly with elevation and location relative to the volcanic cone (National Oceanic and Atmospheric Administration, 2014). The intense topographic relief forces moist air masses to the higher, colder elevations, where snowfields and alpine glaciers form and are preserved.

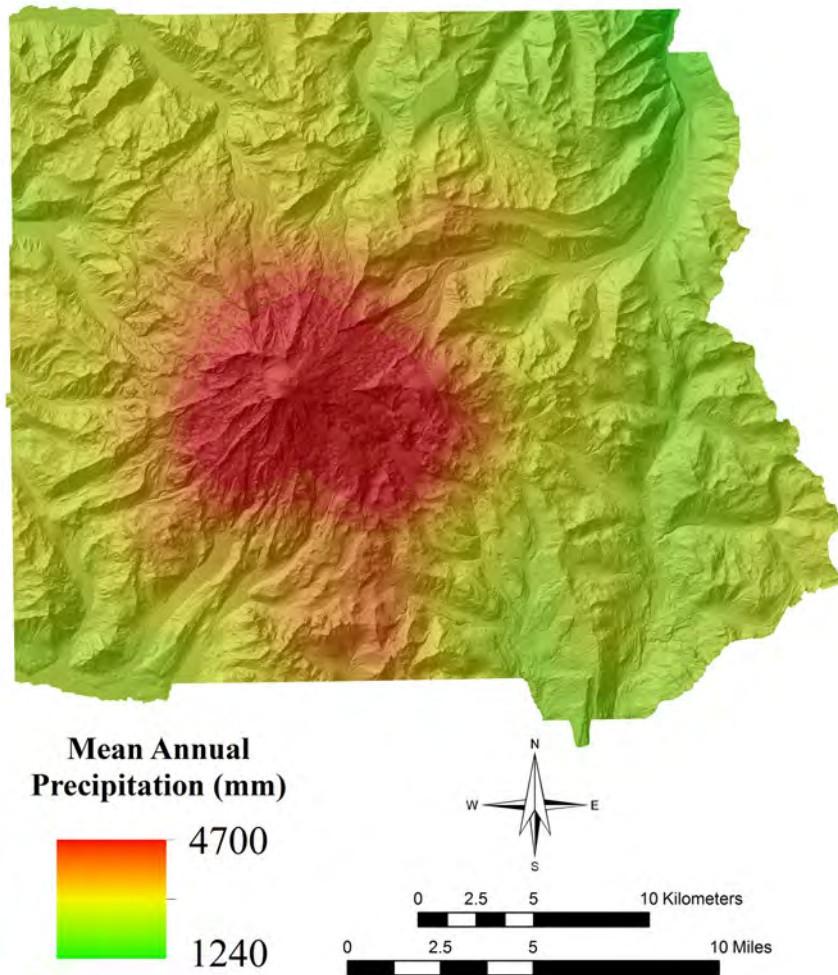


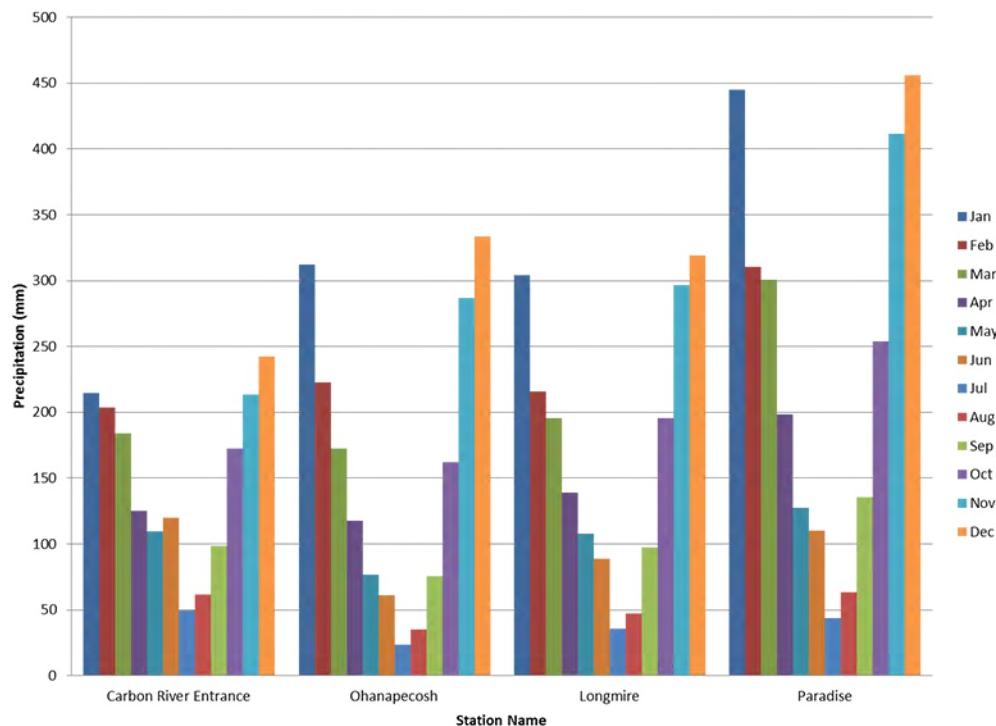
Figure 4.—Mean annual precipitation (millimeters) in Mount Rainier National Park (PRISM Climate Group, 2014).

The Western Regional Climate Center maintains records of several climatic variables at long-term monitoring sites in and around the park. Three climate stations along an elevation gradient were selected to describe general climate trends around Mount Rainier. These stations are Carbon River Entrance (515 meters), Longmire (850 meters), and Paradise (1640 meters). Table 1 gives data on temperature and precipitation for the survey area as recorded at these climate stations.

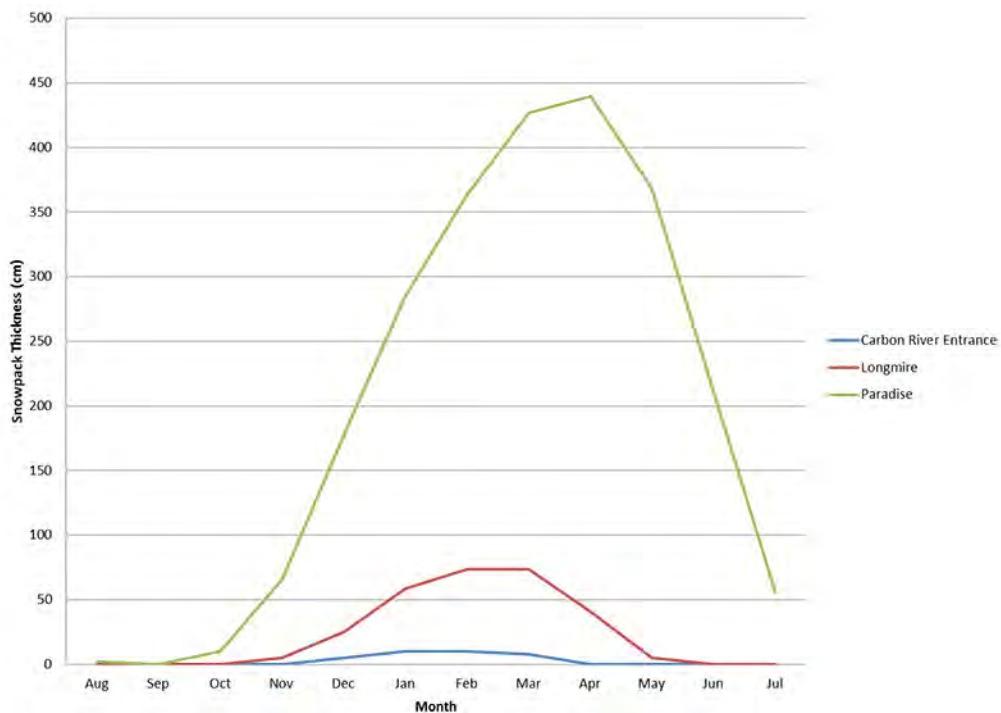
The total mean annual precipitation is about 1740 millimeters at Carbon River Entrance, 2050 millimeters at Longmire, and 3000 millimeters at Paradise. Typically, about 30 to 45 percent of the total precipitations falls in April through October, which includes most of the growing season for the region. [Figure 5](#) shows the distribution of precipitation throughout the calendar year at the Carbon River Entrance, Ohanapecosh, Longmire, and Paradise climate stations. The heaviest 1-day rainfall during the period of record was 287 millimeters at Paradise on November 6, 2006. At the highest elevations in the park, precipitation is more than twice the annual total at Paradise and other lower elevations.

The mean seasonal snowfall is 107 centimeters at Carbon River Entrance, 438 centimeters at Longmire, and 1663 centimeters at Paradise. The mean monthly snowpack peaks late in winter to early in spring ([fig. 6](#)). Paradise once held the world

## Soil Survey of Mount Rainier National Park, Washington



**Figure 5.—Mean monthly precipitation at long-term climate monitoring stations in Mount Rainier National Park (NOAA, 2014).**



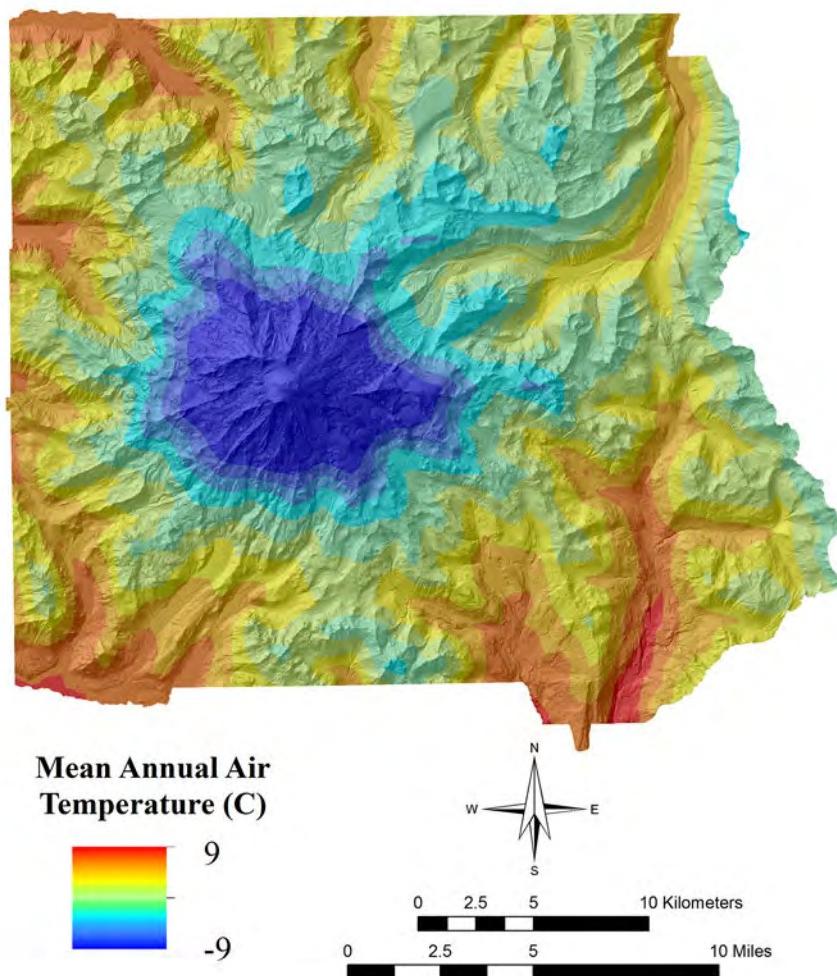
**Figure 6.—Mean monthly snowpack at long-term climate monitoring stations in Mount Rainier National Park (NOAA, 2014).**

## Soil Survey of Mount Rainier National Park, Washington

record for the most measured seasonal snowfall with more than 28.5 meters received in the winter of 1971-1972 (National Park Service, 2014).

Temperatures are moderated by the proximity to the ocean, but they also exhibit intense seasonality because of the northerly latitude. Typical mean summer air temperatures are 10 to 15 degrees warmer than mean winter air temperatures ([table 1](#)). Throughout the park, the mean annual air temperature ranges from -9 to 9 degrees C ([fig. 7](#)), varying greatly with elevation (PRISM Climate Group, 2014). The mean annual air temperature is lower at the higher elevations throughout the year ([fig. 8](#)).

The mean air temperature in winter at Carbon River Entrance is 1.9 degrees C, and the mean daily minimum temperature is -1.0 degrees. The lowest temperature on record at this station, which occurred on January 14, 1950, is -16.7 degrees. The mean



**Figure 7.**—Mean annual air temperature (degrees C) in Mount Rainier National Park (PRISM Climate Group, 2014).

## Soil Survey of Mount Rainier National Park, Washington

air temperature in winter at Longmire is -0.3 degrees, and the mean daily minimum temperature is -2.9 degrees. The lowest temperature on record at this station, which occurred on January 20, 1950, is -22.8 degrees. The mean air temperature in winter at Paradise is -2.0 degrees, and the mean daily minimum temperature is -5.6 degrees. The lowest temperature on record at this station, which occurred on December 9, 1932, is -28.9 degrees.

The mean air temperature in summer at Carbon River Entrance is 14.4 degrees C, and the mean daily maximum temperature is 20.7 degrees. The highest recorded temperature at this station, which occurred on August 8, 1971, is 36.1 degrees. The mean air temperature in summer at Longmire is 14.2 degrees, and the mean daily maximum temperature is 22.4 degrees. The highest recorded temperature at this station, which occurred on July 14, 1935, is 40.6 degrees. The mean air temperature in summer at Paradise is 10.5 degrees, and the mean daily maximum temperature is 16.0 degrees. The highest recorded temperature at this station, which occurred on August 19, 1998, is 33.4 degrees.

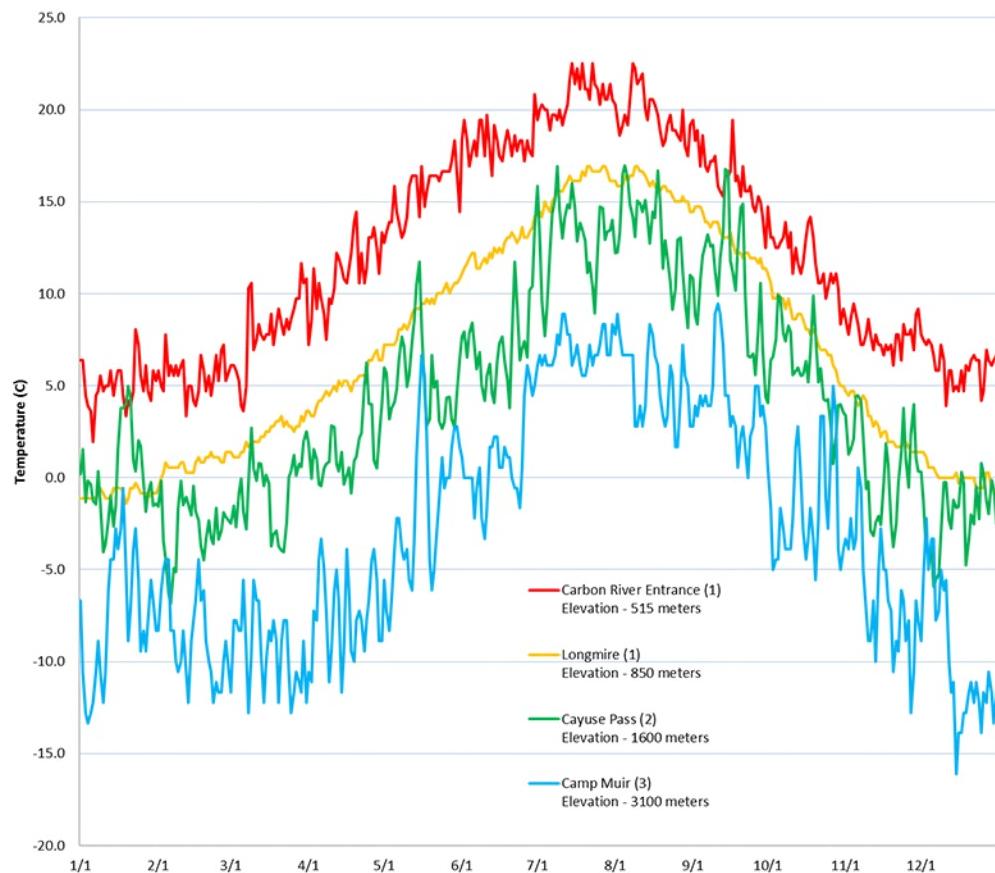


Figure 8.—Mean daily air temperature at long-term climate monitoring stations in Mount Rainier National Park (NOAA, 2014 [1]; USDA, 2014 [2]; Northwest Avalanche Center, 2014 [3]).

## How This Survey Was Made

This survey was made in conjunction with the Soil Inventory and Monitoring Program of the National Park Service to provide information about the soils, landforms, and ecology of Mount Rainier National Park. A meeting was held in 2010 to identify soil resource information needs and to relate those needs to the proposed soil survey. Of particular importance to park staff was information regarding a baseline inventory of soil types and their distribution across the park and how the inventory could relate to air pollution input, organic carbon sequestration, and site rehabilitation.

The soil survey of Mount Rainier National Park was initiated in 2010. Fieldwork for the project commenced in 2011 and continued through 2013, with a focus on establishing new series for broadly defined components. Thirty-six new soil series were established, and these series are endemic in Mount Rainier National Park.

The soils in this survey area were mapped and correlated according to the concepts and limits of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one MLRA or more.

Soils and miscellaneous areas in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. This model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soils scientists must place boundaries between the soils, resulting in the polygon delineations on the detailed soil maps. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

During the soil survey, ecological site and soil component relationships were observed and soil-ecological site correlation concepts were established to help in designing the map units. Soil and plant specialists tested the concepts during mapping and collected field documentation at numerous points across the landscape.

The information in this survey includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of native plants; and the kinds of bedrock. Approximately 800 observations were made to study the site vegetation, landform, and soil profile, which is the sequence of natural layers, or horizons, in a soil. The soil profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been altered significantly by other biological activity.

Soil scientists recorded the characteristics of the soil profiles that they selected to represent the map unit components. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils

in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (Soil Survey Staff, 2014).

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information and field experience of specialists such as botanists and geologists.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, meadows, roads, and rivers, all of which help in locating boundaries accurately. The final map product was digitized onscreen in a geographic information system using the following base layers—digital 1-meter resolution National Agriculture Image Program (NAIP) publication base color imagery ([fig. 9](#)), topographic hillshade relief ([fig. 10](#)), and slope ([fig. 11](#)). Topographic hillshade and slope maps were derived from a 1-meter resolution digital elevation model (DEM) generated from Light Distance and Ranging (LiDAR) data. Line placement was repeatedly checked against the base layers, the landform map ([fig. 3](#)), and the PRISM Climate Group mean annual air temperature and mean annual precipitation data ([figs. 4 and 7](#)). Soil climate zones were developed to give further consistency to map unit delineations across the survey area with regard to changes in elevation and vegetation distribution ([fig. 12](#)). Soil climate zones are discussed further in the section “Formation of the Soils.”

Soil Survey of Mount Rainier National Park, Washington

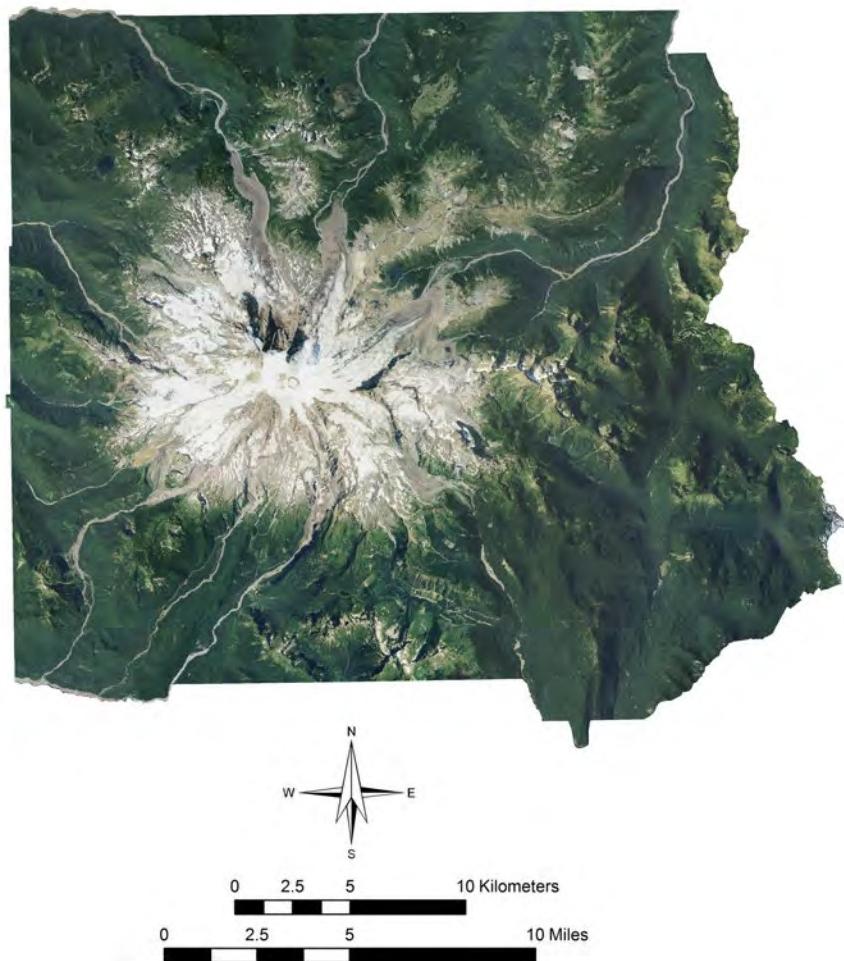


Figure 9.—2009 National Agriculture Image Program composite aerial photograph of Mount Rainier National Park.

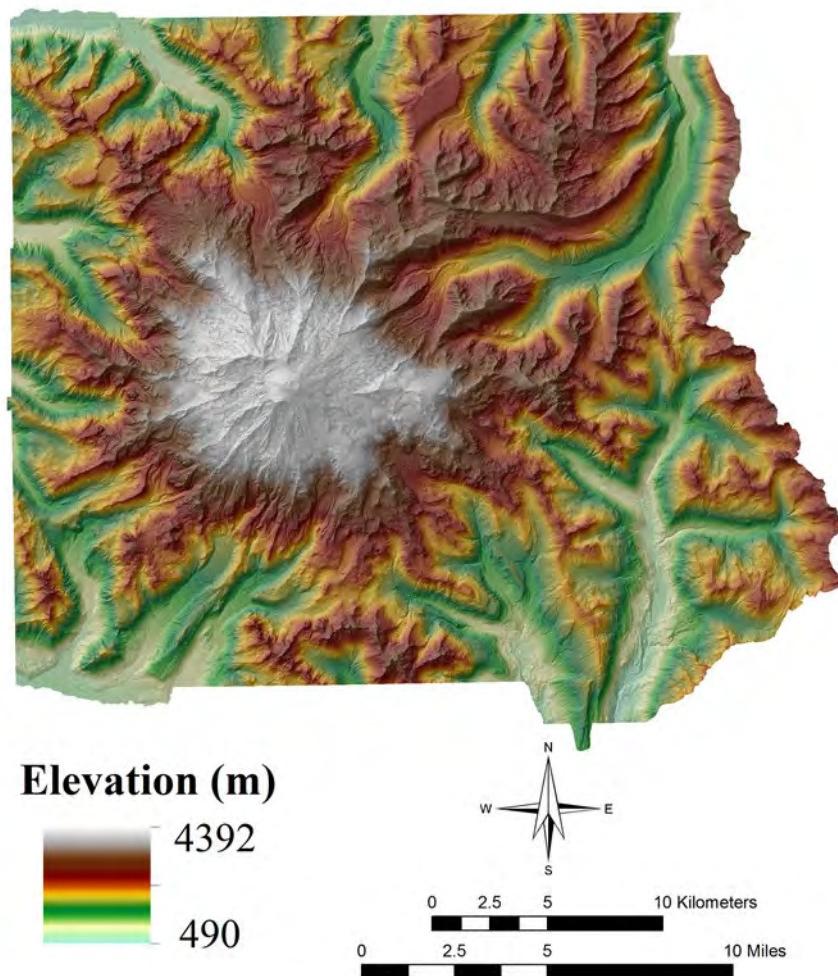


Figure 10.—Elevation values from 1-meter digital elevation model draped over hillshade image of Mount Rainier National Park derived from LiDAR (National Park Service).

Soil Survey of Mount Rainier National Park, Washington

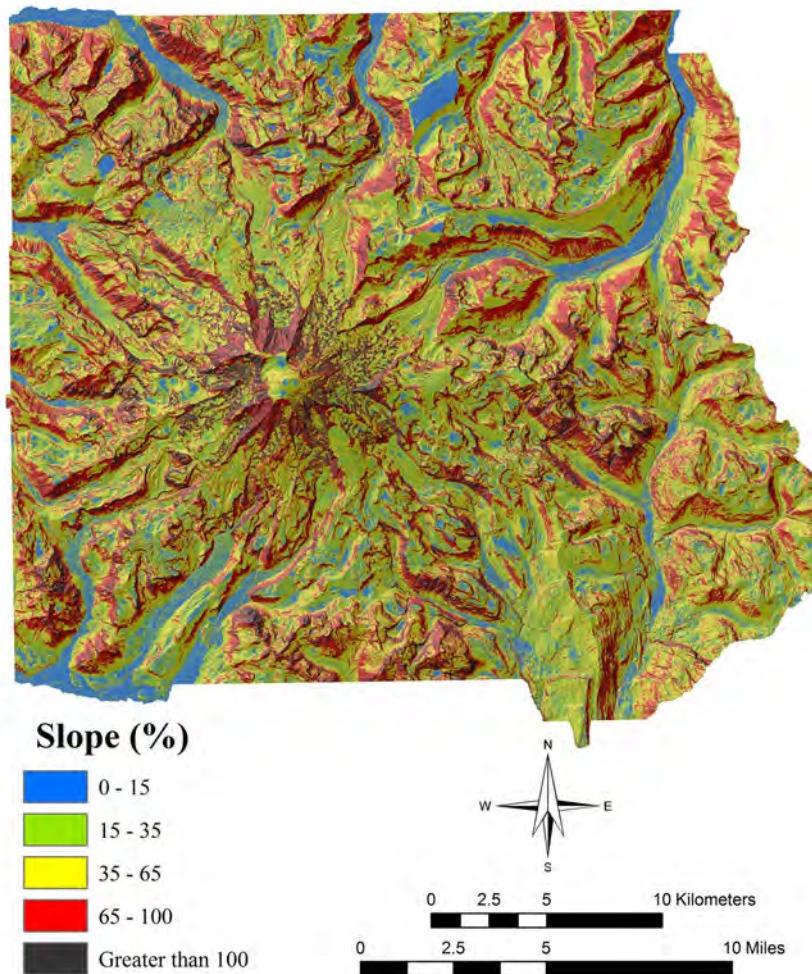


Figure 11.—Slope classes from 1-meter digital elevation model draped over hillshade image of Mount Rainier National Park derived from LiDAR (National Park Service).

Soil Survey of Mount Rainier National Park, Washington

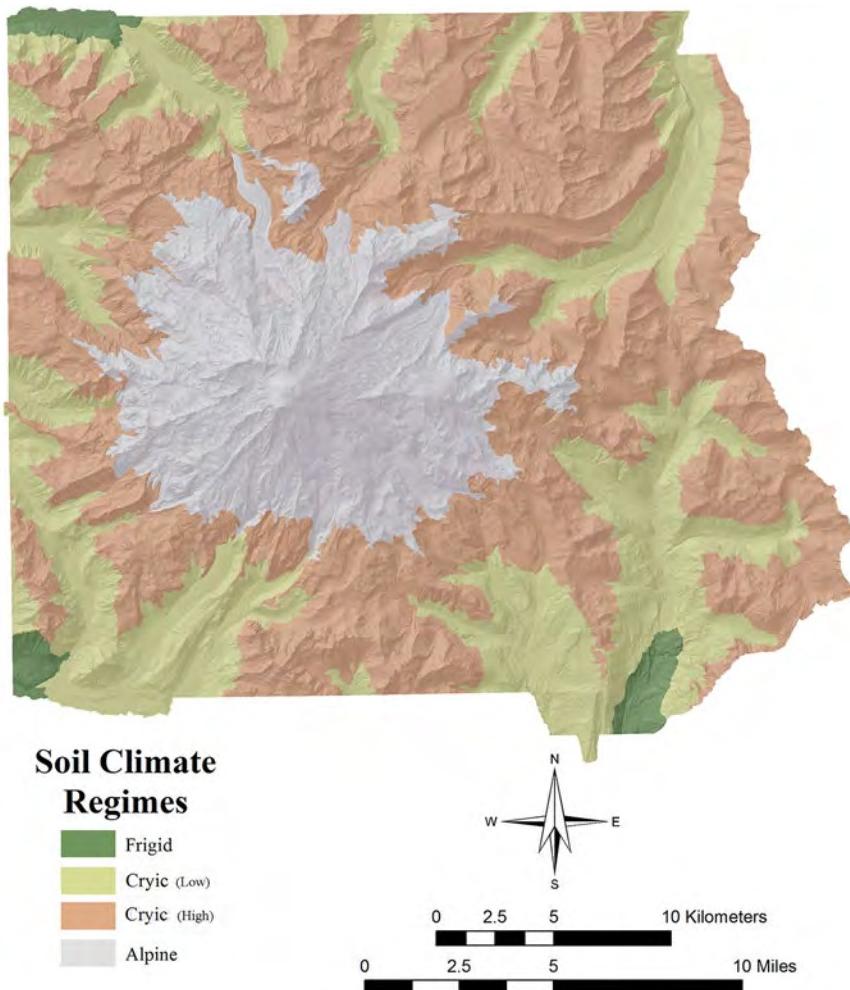


Figure 12.—Soil climate regimes from elevation and climate data (PRISM Climate Group, 2014) draped over hillshade image of Mount Rainier National Park derived from LiDAR (National Park Service).



# Formation of the Soils

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Thirty-six soil series are described and delineated within the boundaries of Mount Rainier National Park. All of these series were established for this soil survey because of the unique conditions in the park. At this time, these series are unique to this area.

The appearance and properties of the soils are a result of the interaction of five soil-forming factors—climate, organisms, topography, parent material, and time. Although each of these factors are discussed separately, they are inseparable with respect to soil formation. For example, a change in the climate influences the ecology that is adapted to a soil type.

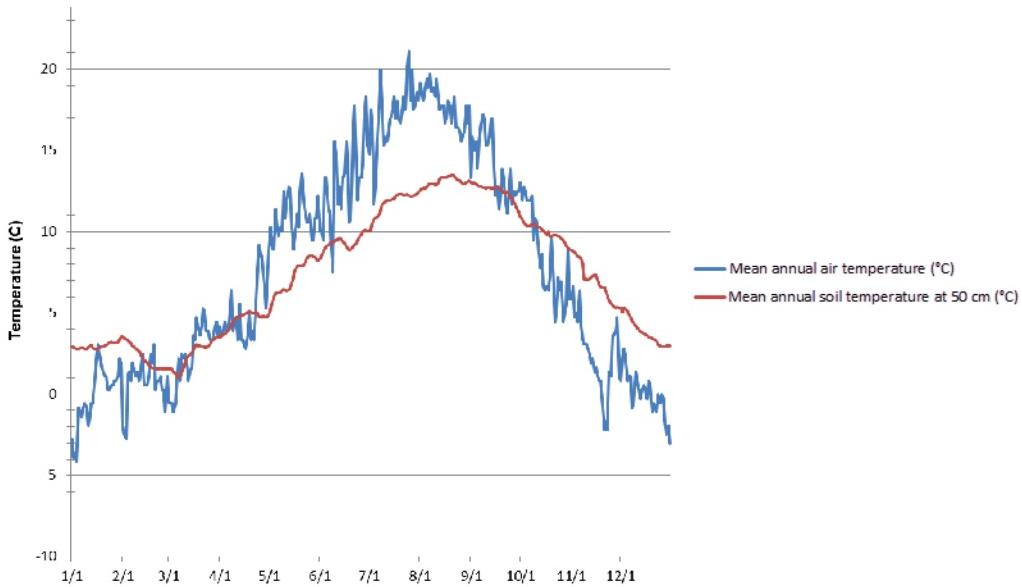
## Climate

Mount Rainier National Park is characterized by a humid, temperate climate. Precipitation falls mostly in winter; summers are relatively warm and dry. Temperatures are generally mild at the lower elevations, and they decrease as elevation increases. The high diversity in climate is evident in the classification of the soils in the park. Differences in climate can be observed in the morphological characteristics of the soils. Climate data from several long-term monitoring stations and from soil sensors help to illustrate the complex mosaic of climates in the park.

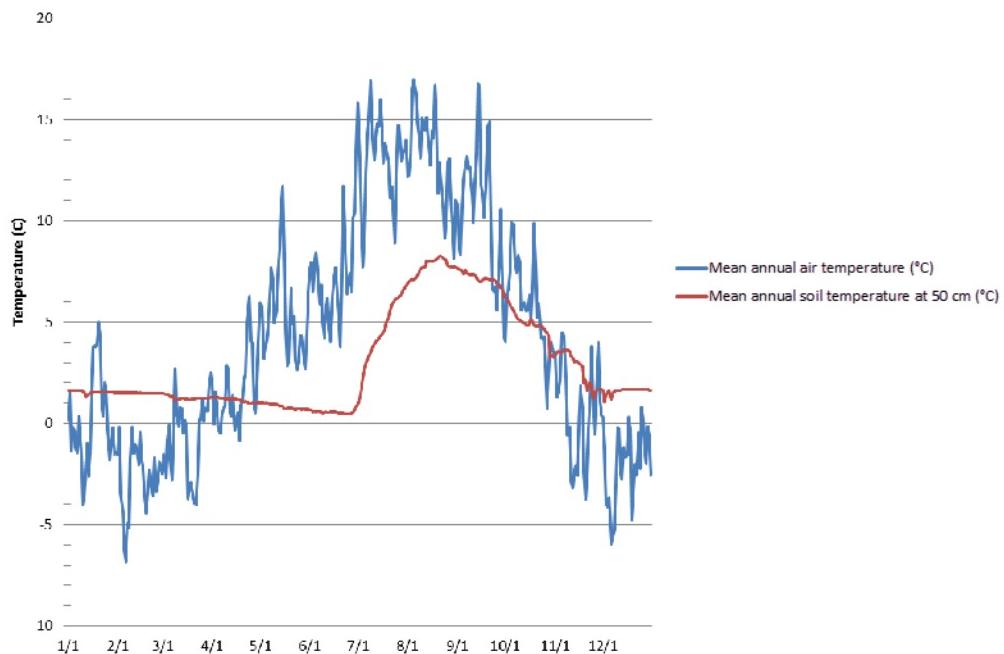
Soil climate regimes are classifications of soil moisture and temperature (Soil Survey Staff, 1999). Several combinations of soil moisture and temperature regimes are in the park ([fig. 12](#)). Abundant rain and snow results in a udic soil moisture regime throughout the park. The quantity and distribution of annual precipitation results in soil profiles that do not dry out for any significant period of time during the growing season. Sufficient precipitation is received in winter to recharge soil moisture. With the mild summers, the amount of precipitation received plus stored soil moisture is roughly equal to evapotranspiration. In ecological terms, moisture is not a limiting factor to plant growth.

Variations in elevation produce strong temperature gradients that affect soil formation. The frigid soil temperature regime is at lower elevations, and the cryic soil temperature regime is at higher elevations ([fig. 12](#)). The frigid soil temperature regime is defined as having a mean annual soil temperature (MAST), measured at a depth of 50 centimeters, of less than 8 degrees C and the difference between mean summer and mean winter soil temperatures is more than 6 degrees (Soil Survey Staff, 1999). The cryic soil temperature regime is defined as having a MAST of less than 8 degrees and less than 6 degrees variation throughout the year. The average daily air and soil temperatures for two long-term climate monitoring stations in Mount Rainier National Park are shown in figures 13 and 14. [Figure 13](#) is from the Ohanapecosh station, which is in the frigid soil temperature regime. The MAST at Ohanapecosh is 7.3 degrees, and the seasonal average is 9.1 degrees in summer and 2.9 degrees in winter. [Figure 14](#) is from the Cayuse Pass station, which is in the cryic soil temperature regime. The MAST at this site is 3.0 degrees, and the seasonal average ranges from 4.3 degrees in summer to 1.5 degrees in winter. At Cayuse Pass, the thick seasonal snowpack has an insulating effect in December through July. Once the snow has accumulated, the soil temperature changes very little, even as the air temperature

Soil Survey of Mount Rainier National Park, Washington



**Figure 13.—Mean annual air and soil temperature at Ohanapecosh, Washington.**



**Figure 14.—Mean annual air and soil temperature at Cayuse Pass, Washington.**

drops well below zero. Once the snow melts early in July, the brief growing season begins. It lasts through November, when snowfall begins to accumulate again. The vast majority of the soils in the park have a cryic temperature regime. The cryic zone is divided into three phases based on elevation—low cryic, high cryic, and alpine tundra. Each of these temperature phases has distinct climates and ecological communities.

These differences in climate affect how soils develop as well as how they are classified and mapped across the landscape. The Kautz, Longmire, and Tipsoo soils have similar morphology, but they have a different MAST, which affects classification. The soils are very deep, well drained Spodosols that formed in volcanic ash and

andesite colluvium under forest plant communities. The Kautz soils are in the frigid soil temperature regime, the Longmire soils are in the low elevation cryic soil temperature phase, and the Tipsoo soils are in the high elevation cryic soil temperature phase.

Climate also has a direct influence on soil morphological properties. Several soil series in the park have an alpine phase. This distinction identifies areas where the climate has such an important influence on the formation of the soils that they can be separated from other soils with similar morphology and genesis. An example is the alpine phase of the Mountwow series. This phase is at higher elevations that are cold enough and have enough snow accumulation to severely limit plant production. As a result of the cold climate and short growing season, the alpine phase of the Mountwow soils has less plant growth, root penetration, microbial activity, and soil organic matter than the other soils in the Mountwow series.

Overall, the interplay of the wide-ranging climate across the park affects the remaining soil-forming factors to varying degrees. Regional pressure systems over the Pacific Ocean drive broad climatic patterns in the Cascade Mountains. Precipitation is influenced by the proximity to the Cascade Crest as well as by the topographic and orographic effects related to the volcanic cone. Snowfall is abundant and has a strong influence on soil moisture and temperature. Air temperature varies seasonally and is greatly influenced by elevation. Commonly during periods of low pressure, the upper reaches of the mountain are above the cloud layer and receive full sun. Conversely, high winds can form lenticular clouds over the volcano when the surrounding lowlands are sunny and warm. The complex mosaic of temperature and precipitation differences has produced numerous micro-climates throughout the park. Over geologic time, these differences have helped to shape the complex pattern of soil, vegetation, and topography in the park.

## Organisms

Temperate coniferous forests are the most dominant ecological community in the Cascade Range (Franklin and Dyrness, 1973; Pojar and MacKinnon, 1994) ([fig. 9](#)). Ecological communities are stratified by the relative elevation, transitioning from low elevation, to montane, to subalpine, and ultimately to alpine that is largely devoid of vegetation. Other plant communities include herbaceous swamps and bogs, riparian zones, deciduous slide paths, subalpine meadows, and true alpine areas that do not support significant plant growth. As precipitation and temperature change across the park, the mosaic of vegetation also changes accordingly. These changes are reflected in the variety of soil types mapped across climatic and vegetative zones.

Organisms affect soil formation in many ways. Plant communities provide habitat and nutrition for a great diversity of animals. Abundant moisture and woody debris provide habitat suitable for a variety of fungi and molds. Pioneering organisms, such as lichens, facilitate the weathering of rock into soil (Birkeland, 1999). Mixing of soil horizons can occur when trees are toppled by wind or when burrowing animals, such as marmots and pikas, excavate soil material. Other soil fauna, such as insects and worms, increase the porosity of soils. Increased porosity enhances the ability of a soil to perform functions such as filtering and storing water, cycling nutrients, and providing a medium for plant roots.

Significant relationships exist between ecological communities and soil genesis (Meirik, 2008). Podzolization occurs beneath woody evergreen vegetation, and melanization occurs beneath deciduous vegetation. The color and thickness of a surface layer is significantly influenced by the plant community. Soils that formed under a meadow community, such as those of the Littleahoma, Burroughs, and Tatoosh series, have a thick, dark-colored surface horizon as a result of the concentration of biomass in the root zone. In contrast, forested soils, such as those of the Kautz and Longmire series, have a lighter colored surface horizon as a result of the concentration

of biomass in the forest canopy and in the duff layer on the mineral soil (Totman and others, 2014).

The dominant forest type of the lower, western flank of the Cascade Range is characterized by the western hemlock (*Tsuga heterophylla*) zone, which includes Douglas-fir (*Pseudotsuga menziesii*) and western redcedar (*Thuja plicata*) in the forest canopy. This corresponds with the frigid soil temperature regime and the udic soil moisture regime. Examples of soils that formed in this biologic/climatic zone include those of the Kautz, Goldenlakes, and Ingraham series. Because of the concentration of forest litter on the mineral soil, these soils are typified by a thin eluvial E horizon immediately below the duff layer.

At higher elevations, different species emerge in the montane forest zones. Pacific silver fir (*Abies amabilis*) and noble fir (*Abies procera*) are indicative of the western flank of the Cascade Range at intermediate elevations. This corresponds with the low elevation cryic soil temperature phase and the udic soil moisture regime. This zone also includes some Douglas-fir, western hemlock, and western redcedar. Soils in this zone include those of the Longmire, Arahustan, and Ohanapecosh series, and they reflect an increasing degree of andisolization and podzolization.

Areas of the high elevation cryic soil temperature phase and the udic soil moisture regime are characterized by a dominance of mountain hemlock (*Tsuga mertensiana*) with some Pacific silver fir, noble fir, subalpine fir (*Abies lasiocarpa*), and Alaska cedar (*Callitropsis nootkatensis*). Soils in this zone, such as those of the Tipsoo, Owyhigh, and Ipsut series, have a high degree of mineral weathering and exhibit a strong morphological expression of Andisols and Spodosols.

Subalpine and alpine areas are at the highest elevations. These areas are characterized by a dominance of shrubs and herbs. Examples of soils in these areas are the Littleahoma, Burroughs, Tatoosh, and Mountwow series. These soils exhibit a high degree of mineral weathering and an accumulation of organic matter in the soil profile. Subalpine meadows are extensive on the flanks of Mount Rainier, and they provide important habitat for many different species.

In addition to forest cover that consists dominantly of coniferous species, there are also patches that are dominantly deciduous species. These species include red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), Sitka alder (*Alnus viridis*), and vine maple (*Acer circinatum*). In general, soils that formed under these species have a thick, dark-colored surface horizon as a result of the accumulation of organic matter. Examples include soils of the Summerland series, including the cold phase.

Other plant communities include riparian areas along stream channels. These vegetative communities are characterized by frequent disturbances from flooding and shifting stream channels. Some riparian plant species include red alder, black cottonwood, Sitka alder, and fireweed (*Chamerion angustifolium*). Soils that support these plant communities include those of the Carbon, Comet, Flett, and Narada series.

In closed depressions and other areas of the park that have a strong hydrologic influence, herbaceous plant communities are dominant. Soils in these areas are saturated with water; thus, insufficient oxygen is available for the microbial breakdown of dead plant tissue. The Ghost series is an example of an organic-rich soil. Typical plant species in these herbaceous communities include rushes (*Juncus spp.*) and sedges (*Carex spp.*).

## Topography

Topography is the defining feature in the park. The icy slopes of Mount Rainier are more than twice the elevation of the surrounding peaks. With regard to soil genesis and formation, the upper reaches of the mountain have little influence on pedogenic processes. Between an elevation of 2400 meters and the summit at 4392 meters, the slopes of the volcano generally do not support soils and are covered dominantly

with rock and ice. The soils that are on these slopes are very shallow and weakly developed. The volcanic cone makes up about 12 percent of the survey area.

Immediately below the cone is the alpine zone. Alpine phases of several soil series are delineated at an elevation of 1400 to 2400 meters. These soils exhibit a higher degree of development, but they support minimal plant life. They were covered with ice during the Little Ice Age and have had relatively little time to develop. Examples of these areas include Burroughs Mountain, Cowlitz Park, and Spray Park.

A typical toposequence, or catena, describes how different soils are distributed across the landscape. In the alpine setting, soils of the Meany series are in the lowest landscape positions, along stream channels and drainageways. These soils are poorly drained and formed in alluvium. Moving away from the stream, the alpine phase of the Mountwow series typically is on footslopes. These soils are somewhat poorly drained and formed in volcanic ash over andesite colluvium. The alpine phase of the Chenuis and Burroughs series is on backslopes and shoulders. These soils are well drained and formed in volcanic ash over andesite colluvium. The Chenuis soil is very deep, and the Burroughs soil is moderately deep to andesite. At the highest portions of the toposequence, the alpine phase of the Burroughs and Tatoosh series are on summits and shoulders. The Tatoosh soils formed in volcanic ash over andesite colluvium and are shallow to bedrock. These soils are intermingled with areas of Rock outcrop in the alpine zone.

This toposequence is repeated throughout the survey area. Similar relationships of soils are in the subalpine zone, but the soil series are different. In the alpine zone, an idealized sequence includes soils of the Meany series and the alpine phase of the Mountwow, Chenuis, Burroughs, and Tatoosh series. In the subalpine zone, the sequence includes soils of the Williwakas, Mountwow, Littletahoma, Burroughs, and Tatoosh series. In the high elevation cryic forest zone, the sequence includes the cold phase of the Flett series and soils of the Mysticlake, Tipsoo, Owyhigh, and Ipsut series. In the low elevation cryic forest zone, the sequence includes soils of the Flett, Vantrump, Longmire, Arahustan, and Ohanapecosh series. In the frigid forest zone, the sequence includes soils of the Carbon, Tokaloo, Kautz, Goldenlakes, and Ingraham series. A correlation between the thickness of the soil profile, or depth to bedrock, and topography exists regardless of elevation, climate, or vegetative community. Convex positions on summits and ridgelines tend to support shallower soils, and concave positions tend to collect water and soil material.

Gravity constantly affects the topography of Mount Rainier. Mass movement is common and is a readily apparent feature in the area because of the steep topography. Larger scale mass movement has impacted land surface morphology, stream courses, and biotic communities. One notable landslide is on the western flanks of the Cowlitz Divide (Riedel and Dorsch, n.d.). This large slide (428 hectares) impeded the drainage of the Muddy Fork of the Cowlitz River and created a large flood plain behind the deposition zone.

On a less apparent and relatively smaller scale, the effects of gravity are exhibited by soil creep and mixing of debris aprons and steep valley walls. Over time, soil material moves downslope, resulting in mixed soil profiles and an accumulation of soil material in the lower positions. In other places, continuous landslides and avalanches have resulted in soil profiles that formed in colluvium. Soils of the Summerland series are typical of those in active positions.

The relative stability of a landform has a great influence on the soils in an area (Briggs and others, 2006). An active alluvial flood plain or valley bottom supports young soils characterized by minimal profile development and continued deposition of alluvium. Soils of the Carbon, Comet, Narada, Flett, and Meany series are examples of alluvial soils. In contrast, a Pleistocene moraine that has been stable for thousands of years supports older soils that have more development. Soils of the Kautz, Longmire,

and Tipsoo series are examples of well-developed soils on stable landscapes, such as moraines, valley walls, and debris aprons.

The effects of water, ice, and gravity result in unique depositional surfaces governed by specific mechanisms of erosion. The topography of the survey area is diverse because of the multitude of forces that have constructed and are eroding the mountainous landscape. The landforms of the area have been mapped by park staff and are useful in studying the soils in the area ([fig. 3](#)).

## Parent Material

Parent material refers to the kind of material in which a soil forms over time. The soils in the survey area formed in many kinds of parent material. One of the most common is volcanic ash. More than 30 different tephra layers from multiple volcanoes are present (Pringle, 2008). The majority of the soils in the area are rich in ash and have a high concentration of volcanic glass. Andesite that erupted from Mount Rainier is also common. This material is typically below the ash. It is coarse textured and has a high concentration of rock fragments. The volcanic ash and andesite that cover the volcano are constantly being reworked by erosion. Glaciers have sculpted the flanks and valleys and deposited till. Abundant precipitation feeds the large rivers that continually alter the valleys and deposit alluvial material. Avalanches, lahars, and landslides mix with the existing parent material, and new soils are formed. Soils that formed in organic matter are in some areas, such as bogs or fens.

Volcanic glass is a primary mineral in the parent material in the survey area. It is the most common mineral in the sand fraction of the dominantly coarse soils. Volcanic eruptions of Mount Rainier, Mount Mazama (present-day Crater Lake in Crater Lake National Park) and Mount St. Helens (Mount St. Helens National Volcanic Monument) produced tephra that was deposited through airfall across the landscape. Originally deposited as a discontinuous mantle of varying thickness, this material has been reworked by erosion and now is in all of the parent material in the area. In some soils, such as those of the Mountwow and Littlelahoma series, the ash deposits are fairly distinct, continuous layers in the soil profile. In other soils, such as those of the Summerland, Carbon, Glacierisland, and Ghost series, the ash is more thoroughly mixed into the parent material (colluvium, alluvium, lahars, and organic matter, respectively).

Other soils on the most stable landscapes, such as the valley walls and debris aprons, have had sufficient time to develop into Spodosols. These soils are characterized by the translocation of iron and aluminum vertically in the profile and are closely associated with coniferous vegetation (Meirik, 2008). This is visible in the profile as an albic-spodic horizon sequence. Albic horizons are light in color due to the removal of sesquioxides and organic matter. Spodic horizons are richer in color due to the deposition of these materials. These soils commonly have a considerable influence of ash and have andesite colluvium and residuum at a greater depth in the profile. Examples of Spodosols include soils of the Kautz, Goldenlakes, Ingraham, Longmire, Arahustan, Ohanapecosh, Tipsoo, Owyhigh, and Ipsut series. These soils formed in volcanic ash over reworked andesite colluvium.

In contrast, some soils are not influenced by ash or andesite. The Ghost series formed almost entirely in organic material, except for a few thin layers of volcanic ash. In wet, cold environments, the rate of microbial decomposition of organic matter is slower than the rate in which it accumulates. Other mineral soils that have a high amount of organic matter are soils of the Frogheaven and Sunbeam series. These soils are influenced by a seasonal high water table that slows the rate of decomposition of organic material. Soils of the Summerland series are well drained and have a high concentration of organic matter because of the deciduous forest cover.

Some soils in the area formed in material transported by surface water. These alluvial soils are common in low landscape positions near major streams and rivers. Soils of the Carbon, Comet, Flett, and Narada series are examples. These soils commonly support riparian vegetation, and wetness commonly restricts management. The concentration of volcanic glass is high in these soils because of sedimentation from rivers and streams.

Other parent material includes till, lahar sediment, and colluvium. Glaciers, lahars, avalanches, and landslides can mix the surrounding parent material. Soils of the Summerland series formed in colluvium in the path of landslides and avalanches. The repeated disturbance mixes up the soil profile and results in a concentration of rock fragments. Soils of the Glacierisland, Sheepskull, Sluiskin, and Wonderland series are unique in that they formed in glacial till and lahars. An example is the soils at the toe of the Tahoma Glacier.

## Time

Formation of a soil is ultimately the result of the interaction of the previously discussed soil-forming factors in relation to time. The end of the last glaciation of the Cascade Range in Washington effectively set the time for soil formation to begin about 11,500 years ago (Armstrong and others, 1965; Porter and Swanson, 1998). Soil formation has progressed since that time as a result of four general soil-forming processes—additions, losses, transformations, and translocations (Simonson, 1959). Soil horizonation is a result of these processes acting over time. The dark-colored surface layer of soils such as those of the Sunbeam, Frogheaven, and Ghost series is a result of additions of organic matter that can happen over a relatively short amount of time.

Redoximorphic concentrations and depletions in the subsoil of the Sunbeam, Frogheaven, and Unicornpeak series are evidence of transformation and translocation of iron due to periodic saturation by water. These can form in a relatively short amount of time, but they can also persist for long periods of time due to the slow nature of losses in the soil environment. Presence of an albic-spodic horizon sequence that extends into the subsoil of soils such as those of the Kautz, Longmire, and Tipsoo series suggests that the landscape and soil-forming processes have been stable since the glacial till was deposited at the end of the last glacial period.

When discussing soil genesis and profile development over time, it is helpful to place the soils of the survey area into an ecological context. Biological succession is important with regard to soil genesis. The maturation of plant communities over time impacts the development of soils. Meirik has shown statistical correlations between soil properties and vegetation (Meirik, 2008). The concept of potential natural vegetation (PNV) is useful in placing soils in an ecological context. An understanding of successional patterns and the response and recovery of an ecosystem to large-scale changes (i.e., landslides, fires, logging, etc.) is helpful. In this survey area, a land surface will mature into a low-elevation forest composed of western hemlock, Douglas-fir, and western redcedar if it remains undisturbed. This forest association is the PNV for sites below an elevation of about 1250 meters. After a stand-clearing disturbance, pioneering plant species, namely alders, maples, and grasses, will colonize.

Alders have the ability to biologically fix nitrogen due to symbiotic relationships with soil micro-organisms. Alders are well suited to nutrient-poor soil environments. As the plant community matures, western redcedar or western white pine (*Pinus monticola*) may be the first coniferous species to become established. These species are then followed by Douglas-fir and hemlocks. Given sufficient time to reach a climax stage, hemlocks will mature and compete with Douglas-fir as the dominant species.

This chain of ecological succession is analogous to the development of soils on disturbed land surfaces in the survey area. The maturation of plant communities over time impacts the development of the soils. An idealized sequence of soil development is useful in illustrating the effects of time on soil genesis. Initially, a landslide that begins on a valley wall will deposit fresh colluvial parent material on the valley floor. This is evident in the many boulder fields throughout the survey area. During a large-scale landslide or avalanche, soil material that had been developing over time commonly is removed or buried. The unweathered parent material subsequently goes through the four general soil-forming processes to develop into a soil. This fresh surface has rock fragments that develop a coating of moss or lichen. The moss layers commonly are enriched by litter from nearby plants, and young, shallow soils composed mostly of organic matter form. When pioneering plant species such as red alder or Sitka alder colonize the fresh surface, melanization is evident. The profile eventually develops into soils such as those of the Summerland series that have a dark-colored horizon enriched with organic matter and a high concentration of rock fragments more than 2 millimeters in diameter.

Given sufficient time and stability, coniferous forest communities will colonize the surface and podzolization may shift the pedogenic controls to produce soils such as those of the Longmire series. This change is reflected in the horizonation of the soil, as characterized by an albic-spodic sequence. These mature Spodosols are analogous to a mature stand of hemlock and Douglas-fir trees in the PNV. Well-developed Spodosols could be termed the “potential natural soils” for this environment. This idealized sequence of profile development is useful in understanding the effects of time on soil formation. Although the soils are difficult to date quantitatively, this sequence provides a relative measure of the age of a soil.

As opposed to the concept of relative age, absolute age can be determined from specific events in the history of the area. Periodic eruptions of Cascade Range volcanoes provide excellent chronostratigraphic markers in many soil profiles. Tephra deposits from Mount Rainier, Mount St. Helens, and ancient Mount Mazama have been observed throughout the Pacific Northwest, and tephrachronology has been used for dating in numerous pedological (Briggs and others, 2006), archaeological (Burtchard, 1998), and paleoclimatic reconstruction studies. In addition to tephrachronology, Scott and others have been able to precisely date lahars, debris flows, and jokulhlaups by studying buried woody debris in the landslide deposits (Scott and others, 1995).

The Mountwow series is an excellent example for precisely dating soil material. The Mountwow soils formed in volcanic ash over andesite colluvium. In a typical profile, seven different tephra layers overly the colluvium. The tephra layers vary in thickness depending on the location in the survey area. Each of these identifiable tephra deposits corresponds with a dated eruption from the source volcano (Mullineaux, 1974). The resulting soil horizons that formed in the tephra can easily be dated and provide useful information regarding the time of soil formation and the age of entrained material between eruptions. Archeological evidence can also be dated by its relative position in this volcanoclastic sedimentary profile.

# Classification of the Soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2014). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

**ORDER.** Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Spodosol.

**SUBORDER.** Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

**GREAT GROUP.** Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplodods (*Haplo*, meaning minimal horizonation, plus *cryod*, the suborder of the Spodosols that has a cryic temperature regime).

**SUBGROUP.** Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Andic* identifies the subgroup that has dominantly andic soil properties. An example is Andic Haplodods.

**FAMILY.** Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is ashy, amorphic Andic Haplodods.

**SERIES.** The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistency, mineral and chemical composition, and arrangement in the profile.

Table 2 indicates the order, suborder, great group, subgroup, and family of the soil series in the survey area.

## Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993) and in the "Field Book for Describing and Sampling Soils" (Schoeneberger and others, 2012). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2014). Following the pedon description is the range of important characteristics of the soils in the series.

### **Arahustan Series**

#### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Valley walls, bedrock benches, debris aprons, ridges

*Slope range:* 5 to 100 percent

*Elevation:* 550 to 1800 meters

*Mean annual precipitation:* 1295 to 2870 millimeters

*Mean annual air temperature:* 3 to 7 degrees C

*Frost-free period:* 60 to 90 days

#### **Soil Characteristics**

*Depth class:* Moderately deep to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium over andesite

*Taxonomic class:* Ashy, amorphic Andic Haplocryads

#### **Typical Pedon**

Arahustan ash loamy sand ([fig. 15](#)) in an area of Longmire-Arahustan complex, 35 to 100 percent slopes; approximately 1 kilometer northeast of the White River Ranger Station, upslope from State Route 410, adjacent to Deadwood Creek; Mount Rainier National Park, Pierce County, Washington; 100 meters south and 700 meters west of the northeast corner of section 3, T. 16 N., R. 10 E.; White River Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.905801 degrees north and longitude 121.538617 degrees west (latitude 46 degrees, 54 minutes, 21 seconds north and longitude 121 degrees, 32 minutes, 19 seconds west), WGS 84; UTM 611 296 meters E, 5 195 732 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.

Oe—2 to 8 centimeters; moderately decomposed plant material; common very fine and fine and few medium roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

E—8 to 20 centimeters; gray (10YR 5/1) ash loamy sand, gray (10YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; strongly acid (pH 5.2); abrupt wavy boundary.



Figure 15.—Typical profile of an Arahustan soil. Numerals on tape indicate centimeters.

Bs1—20 to 36 centimeters; dark brown (7.5YR 3/2) paragravelly ashy loamy sand, brown (7.5YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium to very coarse roots; many very fine and fine interstitial pores; 20 percent pumice par gravel; moderately acid (pH 5.7); clear irregular boundary.

Bs2—36 to 60 centimeters; dark brown (7.5YR 3/3) ashy sandy loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 10 percent pumice par gravel; moderately acid (pH 5.7); clear wavy boundary.

2Bw—60 to 70 centimeters; brown (10YR 4/3) very gravelly ashy sandy loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 35 percent andesite gravel and 5 percent andesite cobbles; moderately acid (pH 5.9); abrupt irregular boundary.

2R—70 centimeters; fractured andesite.

## Burroughs Series

### Setting

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley walls, bedrock benches, debris aprons, parklands, ridges

*Slope range:* 5 to 100 percent

*Elevation:* 1150 to 2390 meters

*Mean annual precipitation:* 1550 to 3685 millimeters

*Mean annual air temperature:* 1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### Soil Characteristics

*Depth class:* Moderately deep to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium over andesite

*Taxonomic class:* Medial, glassy Humic Vitricryands

### Typical Pedon

Burroughs medial fine sandy loam ([fig. 16](#)) in an area of Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes; approximately 8 kilometers north of Chinook Pass, along the west slope of Crystal Mountain; Mount Rainier National Park, Pierce County, Washington; 610 meters south and 750 meters east of the northwest corner of section 23, T. 17 N., R. 10 E.; White River Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.943841 degrees north and longitude 121.503829 degrees west (latitude 46 degrees, 56 minutes, 38 seconds north and longitude 121 degrees, 30 minutes, 14 seconds west), WGS 84; UTM 613 865 meters E, 5 200 010 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material from grasses and forbs; common very fine and fine roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

A1—2 to 16 centimeters; very dark brown (10YR 2/2) medial fine sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 5 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

A2—16 to 50 centimeters; black (10YR 2/1) medial sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 5 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

A3—50 to 68 centimeters; very dark brown (10YR 2/2) gravelly medial sandy loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; 5 percent fine subangular andesite gravel, 15 percent medium and coarse subangular andesite gravel, and 5 percent subangular andesite cobbles; strongly acid (pH 5.2); clear irregular boundary.

A4—68 to 80 centimeters; dark brown (10YR 3/3) gravelly medial sandy loam, brown (10YR 5/3) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine



Figure 16.—Typical profile of a Burroughs soil. Numerals on tape indicate centimeters.

irregular pores; 5 percent fine subangular andesite gravel, 15 percent medium and coarse subangular andesite gravel, and 5 percent subangular andesite cobbles; strongly acid (pH 5.4); abrupt irregular boundary.  
2R—80 centimeters; fractured andesite.

## **Carbon Series**

### ***Setting***

*Landform:* Flood plains, terraces

*Slope range:* 0 to 20 percent

*Elevation:* 530 to 655 meters

*Mean annual precipitation:* 1955 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high

*Landscape:* Cascade river valleys

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Taxonomic class:* Ashy, glassy, frigid Aquandic Humudepts

### ***Typical Pedon***

Carbon very gravelly ashy sandy loam ([fig. 17](#)) in an area of Comet-Carbon complex, 0 to 20 percent slopes; approximately 350 meters southeast of the Nisqually



**Figure 17.—Typical profile of a Carbon soil. Numerals on tape indicate centimeters.**

## Soil Survey of Mount Rainier National Park, Washington

entrance and north of the Nisqually River, on a small terrace; Mount Rainier National Park, Pierce County, Washington; 370 meters north and 305 meters east of the southwest corner of section 34, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.73913 degrees north and longitude 121.91403 degrees west (latitude 46 degrees 44 minutes 21 seconds north and longitude 121 degrees 54 minutes 50 seconds west), WGS 84; UTM 582 963 meters E, 5 176 747 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

Oe—2 to 6 centimeters; moderately decomposed plant material; common very fine and fine and few medium and coarse roots; very strongly acid (pH 4.5); clear wavy boundary.

A1—6 to 31 centimeters; black (10YR 2/1) very gravelly ashy sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common fine irregular pores; 10 percent fine gravel, 25 percent medium and coarse gravel, and 5 percent cobbles; strongly acid (pH 5.4); clear irregular boundary.

A2—31 to 61 centimeters; black (10YR 2/1) ashy fine sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium to very coarse roots; common fine irregular pores; 5 percent fine gravel and 5 percent medium and coarse gravel; strongly acid (pH 5.4); clear irregular boundary.

Bg1—61 to 93 centimeters; very dark grayish brown (10YR 3/2) ashy fine sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and medium and few very fine, coarse, and very coarse roots; common fine irregular pores; 3 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels and 4 percent dark gray (10YR 4/1) iron depletions in matrix; 5 percent fine gravel and 5 percent medium and coarse gravel; strongly acid (pH 5.4); clear wavy boundary.

Bg2—93 to 150 centimeters; very dark grayish brown (10YR 3/2) extremely gravelly ashy sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine interstitial pores; 3 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels and 4 percent dark gray (10YR 4/1) iron depletions in matrix; 10 percent fine gravel, 30 percent medium and coarse gravel, 20 percent cobbles, and 5 percent stones; moderately acid (pH 5.7).

## ***Chenuis Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley floors, valley walls, parklands

*Slope range:* 5 to 100 percent

*Elevation:* 1110 to 2390 meters

*Mean annual precipitation:* 1550 to 3935 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium

*Taxonomic class:* Medial-skeletal, glassy Humic Vitricryands

### ***Typical Pedon***

Chenuis gravelly medial coarse sandy loam ([fig. 18](#)) in an area of Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes; approximately 2 kilometers southeast of Paradise Ranger Station; Mount Rainier National Park, Lewis County, Washington; 515 meters north and 240 meters east of the southwest corner of section 20, T. 15 N., R. 9 E.; Mount Rainier East, Washington, U.S. Geological Survey Quadrangle; latitude 46.773699 degrees north and longitude 121.715468 degrees west (latitude 46 degrees, 46 minutes, 25 seconds north and longitude 121 degrees,



Figure 18.—Typical profile of a Chenuis soil. Numerals on tape indicate centimeters.

42 minutes, 56 seconds west), WGS 84; UTM 598 068 meters E, 5 180 817 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 3 centimeters; slightly decomposed plant material from grasses and forbs; many fine interstitial pores; very strongly acid (pH 4.5); clear smooth boundary.

A1—3 to 15 centimeters; dark brown (10YR 3/3) gravelly medial coarse sandy loam, brown (10YR 4/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium, common coarse, and few very coarse roots; many fine and very fine interstitial pores; 15 percent andesite gravel and 10 percent andesite cobbles; strongly acid (pH 5.2); abrupt wavy boundary.

A2—15 to 30 centimeters; very dark grayish brown (10YR 3/2) very gravelly medial sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; many fine and very fine interstitial pores; 30 percent andesite gravel and 15 percent andesite cobbles; strongly acid (pH 5.2); clear wavy boundary.

Bw1—30 to 65 centimeters; dark brown (7.5YR 3/4) extremely cobbly medial sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, medium, and coarse roots; many fine and very fine interstitial pores; 25 percent andesite gravel, 30 percent andesite cobbles, and 10 percent andesite stones; strongly acid (pH 5.2); clear irregular boundary.

Bw2—65 to 150 centimeters; dark grayish brown (10YR 4/2) extremely cobbly medial sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, medium, and coarse roots; many fine and very fine interstitial pores; 30 percent andesite gravel, 30 percent andesite cobbles, and 10 percent andesite stones; strongly acid (pH 5.4).

## Comet Series

### ***Setting***

*Landscape:* Cascade river valleys

*Landform:* Flood plains, terraces

*Slope range:* 0 to 20 percent

*Elevation:* 530 to 655 meters

*Mean annual precipitation:* 1955 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Taxonomic class:* Ashy-skeletal, glassy, frigid Vitrandic Humudepts

### ***Typical Pedon***

Comet very gravelly ashy sandy loam ([fig. 19](#)) in an area of Comet-Carbon complex, 0 to 20 percent slopes; approximately 200 meters southeast of the Nisqually entrance and north of the Nisqually River, on a small terrace; Mount Rainier National Park,

Soil Survey of Mount Rainier National Park, Washington

Pierce County, Washington; 425 meters north and 105 meters east of the southwest corner of section 34, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.73963 degrees north and longitude 121.91666 degrees west (latitude 46 degrees, 44 minutes, 23 seconds north and longitude 121 degrees, 55 minutes, 0 seconds west), WGS 84; UTM 582 761 meters E, 5 186 800 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

Oe—2 to 4 centimeters; moderately decomposed plant material; many very fine and fine and common medium to very coarse roots; very strongly acid (pH 4.5); clear wavy boundary.



Figure 19.—Typical profile of a Comet soil. Numerals on tape indicate centimeters.

- A1—4 to 28 centimeters; black (10YR 2/1) very gravelly ashy sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and medium, many fine, and few coarse and very coarse roots; common fine irregular pores; 10 percent fine gravel, 30 percent medium and coarse gravel, and 15 percent cobbles; strongly acid (pH 5.4); clear wavy boundary.
- A2—28 to 46 centimeters; black (10YR 2/1) very gravelly ashy loamy sand, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium to very coarse roots; common fine interstitial pores; 10 percent fine gravel, 30 percent medium and coarse gravel, and 10 percent cobbles; strongly acid (pH 5.4); clear wavy boundary.
- A3—46 to 71 centimeters; black (10YR 2/1) very gravelly ashy loamy sand, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common fine interstitial pores; 10 percent fine gravel, 15 percent medium and coarse gravel, and 10 percent cobbles; strongly acid (pH 5.4); clear wavy boundary.
- A4—71 to 93 centimeters; very dark gray (10YR 3/1) very gravelly ashy loamy sand, gray (10YR 5/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium to very coarse roots; common fine interstitial pores; 10 percent fine gravel, 20 percent medium and coarse gravel, and 10 percent cobbles; strongly acid (pH 5.4); clear wavy boundary.
- A5—93 to 105 centimeters; black (10YR 2/1) very gravelly ashy fine sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine to very coarse roots; common fine interstitial pores; 1 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; 10 percent fine gravel, 25 percent medium and coarse gravel, and 20 percent cobbles; moderately acid (pH 5.7); clear wavy boundary.
- C—105 to 150 centimeters; very dark gray (10YR 3/1) extremely cobbly ashy fine sandy loam, gray (10YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine to very coarse roots; common fine interstitial pores; 1 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; 10 percent fine gravel, 25 percent medium and coarse gravel, and 25 percent cobbles; moderately acid (pH 5.7).

## **Flett Series**

### **Setting**

*Landscape:* Cascade river valleys  
*Landform:* Flood plains, terraces  
*Slope range:* 0 to 35 percent  
*Elevation:* 630 to 1865 meters  
*Mean annual precipitation:* 1345 to 3175 millimeters  
*Mean annual air temperature:* 2 to 7 degrees C  
*Frost-free period:* 30 to 90 days

### **Soil Characteristics**

*Depth class:* Very deep  
*Drainage class:* Somewhat excessively drained  
*Capacity to transmit water (Ksat):* High or very high

Soil Survey of Mount Rainier National Park, Washington

*Parent material:* Alluvium derived from andesite mixed with volcanic ash  
*Taxonomic class:* Ashy-skeletal, glassy Vitrandic Dystrocryepts

**Typical Pedon**

Flett very stony ashy coarse sandy loam ([fig. 20](#)) in an area of Riverwash-Flett complex, 0 to 25 percent slopes; approximately 2.5 kilometers southeast of Gobblers Knob, along Tahoma Creek and West Side Road; Mount Rainier National Park, Pierce County, Washington; 305 meters north and 760 meters west of the southeast corner of section 14, T. 15 N., R. 7 E.; Mount Wow, Washington, U.S. Geological Survey Quadrangle; latitude 46.78145 degrees north and longitude 121.88634 degrees west



Figure 20.—Typical profile of a Flett soil. Numerals on tape indicate centimeters.

(latitude 46 degrees, 46 minutes, 53 seconds north and longitude 121 degrees, 53 minutes, 11 seconds west), WGS 84; UTM 585 011 meters E, 5 181 480 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; common very fine roots; very strongly acid (pH 4.5); abrupt wavy boundary.

Oe—2 to 4 centimeters; moderately decomposed plant material; common very fine and fine and few medium roots; very strongly acid (pH 4.5); clear wavy boundary.

A—4 to 32 centimeters; black (10YR 2/1) very stony ashy coarse sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine to coarse roots; common fine interstitial pores; 5 percent fine gravel, 10 percent medium and coarse gravel, 15 percent cobbles, and 15 percent stones; strongly acid (pH 5.4); gradual irregular boundary.

C1—32 to 85 centimeters; black (10YR 2/1) extremely stony ashy loamy sand, dark gray (10YR 4/1) dry; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; common fine interstitial pores; 5 percent fine gravel, 30 percent medium and coarse gravel, 15 percent cobbles, 15 percent stones, and 5 percent boulders; strongly acid (pH 5.4); clear wavy boundary.

C2—85 to 115 centimeters; black (10YR 2/1) extremely stony ashy loamy coarse sand, dark gray (10YR 4/1) dry; single grain; loose, nonsticky and nonplastic; common very fine and few fine and medium roots; common fine interstitial pores; 10 percent fine gravel, 20 percent medium and coarse gravel, 15 percent cobbles, 15 percent stones, and 5 percent boulders; moderately acid (pH 5.7); abrupt wavy boundary.

C3—115 to 150 centimeters; black (10YR 2/1) very gravelly ashy loamy sand, dark gray (10YR 4/1) dry; single grain; loose, nonsticky and nonplastic; few very fine roots; common fine interstitial pores; 15 percent fine gravel, 15 percent medium and coarse gravel, and 5 percent cobbles; moderately acid (pH 5.7).

## Frogheaven Series

### **Setting**

*Landscape:* Cascade Mountains, Cascade river valleys

*Landform:* Depressions of flood plains and terraces, swales of valley walls, debris aprons, debris cones, talus slopes

*Slope range:* 0 to 10 percent

*Elevation:* 550 to 1,730 meters

*Mean annual precipitation:* 1,295 to 2,870 millimeters

*Mean annual air temperature:* 3 to 7 degrees C

*Frost-free period:* 60 to 90 days

### **Soil Characteristics**

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash

*Taxonomic class:* Ashy, amorphic, acid Typic Cryaquands

### **Typical Pedon**

Frogheaven mucky ashy fine sandy loam ([fig. 21](#)) in an area of Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes; approximately 4 kilometers southwest of the White River Ranger Station, between Fryingpan Creek and Shaw Creek; Mount Rainier National Park, Pierce County, Washington; 485 meters north and 695 meters west of the southeast corner of section 7, T. 16 N., R. 10 E.; White River

Soil Survey of Mount Rainier National Park, Washington

Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.889218 degrees north and longitude 121.601889 degrees west (latitude 46 degrees, 53 minutes, 21 seconds north and longitude 121 degrees, 36 minutes, 7 seconds west), WGS 84; UTM 606 511 meters E, 5 193 802 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oe—0 to 6 centimeters; moderately decomposed plant material; common very fine and fine and few medium and coarse roots; common fine interstitial pores; very strongly acid (pH 4.5); clear wavy boundary.

A1—6 to 19 centimeters; black (10YR 2/1) mucky ashy fine sandy loam, very dark gray (10YR 3/1) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium and coarse roots; common very fine and fine irregular pores; strongly acid (pH 5.2); abrupt irregular boundary.

A2—19 to 24 centimeters; very dark grayish brown (10YR 3/2) ashy sandy loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; soft,



Figure 21.—Typical profile of a Frogheaven soil. Numerals on tape indicate centimeters.

very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; 20 percent medium faint irregular dark gray (7.5YR 4/1) iron depletions with clear boundaries in matrix and 30 percent medium distinct irregular dark brown (7.5YR 3/4) masses of oxidized iron with clear boundaries in matrix; strongly acid (pH 5.2); abrupt irregular boundary.

Bg1—24 to 34 centimeters; dark brown (10YR 3/3) ashy fine sandy loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 20 percent medium distinct irregular dark gray (7.5YR 4/1) iron depletions with clear boundaries in matrix and 20 percent medium faint irregular dark brown (7.5YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

Bg2—34 to 60 centimeters; very dark brown (7.5YR 2.5/2) par gravelly ashy sandy loam, brown (7.5YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 5 percent fine distinct irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 20 percent medium distinct irregular dark reddish brown (5YR 3/4) masses of oxidized iron with clear boundaries in matrix; 30 percent pumice par gravel; strongly acid (pH 5.4); clear wavy boundary.

Bg3—60 to 75 centimeters; dark brown (10YR 3/3) ashy fine sandy loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; few very fine and fine irregular pores; 25 percent medium faint irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 20 percent medium faint irregular dark brown (7.5YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; strongly acid (pH 5.4); clear wavy boundary.

Bg4—75 to 90 centimeters; dark yellowish brown (10YR 4/4) ashy sandy loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; few very fine and fine irregular pores; 10 percent medium distinct irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 20 percent medium faint irregular dark brown (7.5YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; strongly acid (pH 5.4); clear wavy boundary.

Bg5—90 to 150 centimeters; dark brown (7.5YR 3/2) ashy sandy loam, brown (7.5YR 5/2) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine and fine irregular pores; 10 percent fine faint irregular very dark grayish brown (10YR 3/2) iron depletions with clear boundaries in matrix and 10 percent fine distinct irregular dark brown (7.5YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel and 5 percent andesite gravel; strongly acid (pH 5.4).

## ***Ghost Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Depressions of terraces and cirque floors, swales of debris aprons, parklands, cirques, valley walls

*Slope range:* 0 to 10 percent

*Elevation:* 635 to 1980 meters

## Soil Survey of Mount Rainier National Park, Washington

*Mean annual precipitation:* 1345 to 2970 millimeters

*Mean annual air temperature:* 2 to 7 degrees C

*Frost-free period:* 30 to 90 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Very poorly drained

*Capacity to transmit water (Ksat):* Moderately high or very high

*Parent material:* Decomposing organic material and bands of volcanic ash

*Taxonomic class:* Euic Fluvaquentic Cryosaprists

### ***Typical Pedon***

Ghost muck ([fig. 22](#)) in an area of Ghost-Frogheaven complex, 0 to 10 percent slopes; approximately 3 kilometers east of the Nisqually Entrance Ranger Station, southwest of Tumtum Peak, between Kautz and Tahoma Creeks; Mount Rainier



Figure 22.—Typical profile of a Ghost soil. Numerals on tape indicate centimeters.

## Soil Survey of Mount Rainier National Park, Washington

National Park, Pierce County, Washington; 225 meters north and 190 meters west of the southeast corner of section 35, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.737748 degrees north and longitude 121.879029 degrees west (latitude 46 degrees, 44 minutes, 16 seconds north and longitude 121 degrees, 52 minutes, 45 seconds west), WGS 84; UTM 585 638 meters E, 5 176 632 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

- Oa1—0 to 38 centimeters; dark brown (10YR 3/3) muck, brown (10YR 5/3) dry; many very fine and fine roots; few very fine and fine irregular pores; strongly acid (pH 5.4); abrupt smooth boundary.
- Oa2—38 to 90 centimeters; very dark brown (10YR 2/2) muck, dark grayish brown (10YR 4/2) dry; many very fine and fine roots; few very fine and fine irregular pores; strongly acid (pH 5.4); gradual wavy boundary.
- Oa3—90 to 110 centimeters; very dark brown (10YR 2/2) muck, dark grayish brown (10YR 4/2) dry; many very fine and fine roots; few very fine and fine irregular pores; 1 percent fine distinct greenish gray (10Y 5/1) masses of reduced iron with sharp boundaries in matrix; strongly acid (pH 5.5); abrupt smooth boundary.
- Bg1—110 to 120 centimeters; dark brown (10YR 3/3) ashy loamy sand, brown (10YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; few very fine and fine interstitial pores; 10 percent fine distinct dark gray (10YR 4/1) masses of reduced iron with clear boundaries in matrix; moderately acid (pH 5.6); abrupt smooth boundary.
- O'a1—120 to 130 centimeters; dark brown (10YR 3/3) muck, brown (10YR 5/3) dry; many very fine and common fine roots; few very fine and fine irregular pores; 10 percent fine distinct greenish gray (10Y 5/1) masses of reduced iron with clear boundaries in matrix; moderately acid (pH 5.6); gradual wavy boundary.
- O'a2—130 to 145 centimeters; dark brown (10YR 3/3) muck, brown (10YR 5/3) dry; many very fine and common fine roots; few very fine and fine irregular pores; 20 percent coarse distinct greenish gray (5GY 6/1) masses of reduced iron with clear boundaries in matrix; moderately acid (pH 5.6); abrupt smooth boundary.
- B'g—145 to 150 centimeters; greenish gray (5GY 6/1) ashy loamy coarse sand, light greenish gray (5GY 8/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine and fine interstitial pores; 10 percent pumice par gravel; moderately acid (pH 5.7).

## **Glacierisland Series**

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley floors, valley walls, lahars, moraines, debris cones, outwash terraces, talus slopes

*Slope range:* 10 to 100 percent

*Elevation:* 975 to 2420 meters

*Mean annual precipitation:* 1500 to 3935 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Till and lahar deposits

*Taxonomic class:* Ashy-skeletal, glassy Typic Vitricryands

**Typical Pedon**

Glacierisland very gravelly ashy sandy loam ([fig. 23](#)) in an area of Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes; south of the South Puyallup River, along the Wonderland Trail between Emerald Ridge and South Puyallup River Campground; Mount Rainier National Park, Pierce County, Washington; 635 meters south and 540 meters west of the northeast corner of section 1, T. 15 N., R. 7 E.; Mount Rainier West, Washington, U.S. Geological Survey Quadrangle; latitude 46.814705 degrees north and longitude 121.862439 degrees west (latitude 46 degrees, 48 minutes, 53 seconds north and longitude 121 degrees, 51 minutes, 45 seconds west), WGS 84; UTM 586 782 meters E, 5 185 201 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)



Figure 23.—Typical profile of a Glacierisland soil. Numerals on tape indicate centimeters.

- Oi—0 to 4 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.
- Oe—4 to 14 centimeters; moderately decomposed plant material; few very fine and coarse and common fine and medium roots; very strongly acid (pH 4.5); clear wavy boundary.
- A—14 to 46 centimeters; black (10YR 2/1) very gravelly ashy sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and medium and few coarse roots; common very fine and fine interstitial pores; 10 percent fine andesite gravel, 25 percent medium and coarse andesite gravel, 15 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.7); clear wavy boundary.
- Bw1—46 to 94 centimeters; very dark brown (10YR 2/2) very cobbly ashy sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse and few very coarse roots; common very fine and fine interstitial pores; 20 percent fine andesite gravel, 10 percent medium and coarse andesite gravel, 20 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.7); clear wavy boundary.
- Bw2—94 to 150 centimeters; very dark brown (10YR 2/2) extremely gravelly ashy fine sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine to coarse and few very coarse roots; common very fine and fine interstitial pores; 15 percent fine andesite gravel, 25 percent medium and coarse andesite gravel, 15 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.8).

## **Goldenlakes Series**

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley walls, bedrock benches, debris aprons, ridges

*Slope range:* 0 to 100 percent

*Elevation:* 490 to 1415 meters

*Mean annual precipitation:* 1805 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### ***Soil Characteristics***

*Depth class:* Moderately deep to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over residuum derived from andesite

*Taxonomic class:* Ashy, amorphic, frigid Andic Haplorthods

### ***Typical Pedon***

Goldenlakes paragravelly ashy sandy loam ([fig. 24](#)) in an area of Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes; approximately 500 meters north of the junction of State Route 706 and West Side Road; Mount Rainier National Park, Pierce County, Washington; 365 meters south and 105 meters west of the northeast corner of section 34, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.82778 degrees north and longitude 121.832963



Figure 24.—Typical profile of a Goldenlakes soil. Numerals on tape indicate centimeters.

degrees west (latitude 46 degrees, 44 minutes, 49 seconds north and longitude 121 degrees, 53 minutes, 55 seconds west), WGS 84; UTM 583 445 meters E, 5 177 185 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; few fine roots; very strongly acid (pH 4.5); abrupt smooth boundary.

Oe—2 to 5 centimeters; moderately decomposed plant material; common fine and medium roots; very strongly acid (pH 4.5); clear smooth boundary.

E—5 to 20 centimeters; dark grayish brown (10YR 4/2) paragravelly ashy sandy loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and common fine to coarse roots; common very fine and fine interstitial pores; 10 percent fine pumice paragravel and 5 percent medium and coarse pumice paragravel; strongly acid (pH 5.2); clear irregular boundary.

Bs—20 to 63 centimeters; brown (7.5YR 4/3) paragravelly ashy loamy sand, light brown (7.5YR 6/3) dry; weak fine subangular blocky structure; soft, very friable,

nonsticky and nonplastic; common very fine and medium and few coarse and very coarse roots; common very fine and fine interstitial pores; 15 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; moderately acid (pH 5.7); clear smooth boundary.

2Bw—63 to 88 centimeters; dark brown (7.5YR 3/4) very stony ashy sandy loam, brown (7.5YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine to very coarse roots; common very fine and fine interstitial pores; 10 percent fine andesite gravel, 10 percent medium and coarse andesite gravel, 10 percent andesite cobbles, and 10 percent andesite stones; moderately acid (pH 5.7); abrupt irregular boundary.

2R—88 centimeters; fractured andesite.

## ***Ingraham Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley walls, bedrock benches, debris aprons, ridges

*Slope range:* 0 to 100 percent

*Elevation:* 490 to 1415 meters

*Mean annual precipitation:* 1805 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### ***Soil Characteristics***

*Depth class:* Shallow to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over andesite

*Taxonomic class:* Ashy, amorphic, frigid Lithic Haplorthods

### ***Typical Pedon***

Ingraham paragravelly ashy sandy loam ([fig. 25](#)) in an area of Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes; approximately 600 meters north of the Nisqually entrance; Mount Rainier National Park, Pierce County, Washington; 640 meters south and 10 meters east of the northwest corner of section 34, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.74440 degrees north and longitude 121.91799 degrees west (latitude 46 degrees, 44 minutes, 40 seconds north and longitude 121 degrees, 55 minutes, 5 seconds west), WGS84; UTM 582 652 meters E and 5 177 329 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

Oe—2 to 4 centimeters; moderately decomposed plant material; common fine roots and few very fine and medium roots; very strongly acid (pH 4.5); clear wavy boundary.

E—4 to 7 centimeters; very dark gray (10YR 3/1) paragravelly ashy sandy loam, gray (10YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 15 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; strongly acid (pH 5.2); clear irregular boundary.



Figure 25.—Typical profile of an Ingraham soil. Numerals on tape indicate centimeters.

Bs—7 to 25 centimeters; brown (7.5YR 4/4) paragravelly ashy loamy coarse sand, light brown (7.5YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine to coarse roots; common very fine and fine interstitial pores; 20 percent fine pumice paragravel and 5 percent medium and coarse pumice paragravel; moderately acid (pH 5.7); abrupt wavy boundary.

2R—25 centimeters; fractured andesite.

## Ipsut Series

### *Setting*

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley walls, bedrock benches, debris aprons, ridges

*Slope range:* 10 to 100 percent

*Elevation:* 1015 to 2045 meters

*Mean annual precipitation:* 1345 to 3175 millimeters

*Mean annual air temperature:* 2 to 7 degrees C

*Frost-free period:* 30 to 60 days

### ***Soil Characteristics***

*Depth class:* Shallow to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium over andesite

*Taxonomic class:* Medial, glassy Lithic Haplocryods

### ***Typical Pedon***

Inputs medial loamy sand in an area of Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes; approximately 1 kilometer north of Cayuse Pass, just upslope and east of State Route 410; Mount Rainier National Park, Pierce County, Washington; 590 meters north and 775 meters west of the southeast corner of section 15, T. 16 N., R. 10 E.; White River Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.875678 degrees north and longitude 121.539504 degrees west (latitude 46 degrees, 52 minutes, 32 seconds north and longitude 121 degrees, 32 minutes, 22 seconds west), WGS84; UTM 611 292 meters E, 5 192 384 meters N, zone 10N, NAD83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

Oe—2 to 5 centimeters; moderately decomposed plant material; few very fine and medium roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

E—5 to 8 centimeters; dark gray (7.5YR 4/1) medial loamy sand, gray (7.5YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 5 percent fine pumice par gravel; very strongly acid (pH 4.7); abrupt wavy boundary.

Bs1—8 to 18 centimeters; dark brown (7.5YR 3/3) par gravelly medial sandy loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 10 percent fine pumice par gravel and 10 percent medium and coarse pumice par gravel; strongly acid (pH 5.2); abrupt irregular boundary.

Bs2—18 to 30 centimeters; dark brown (7.5YR 3/3) medial sandy loam, brown (7.5YR 5/3) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 5 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

Bs3—30 to 40 centimeters; brown (7.5YR 4/4) medial sandy loam, brown (7.5YR 5/4) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 5 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; strongly acid (pH 5.4); abrupt irregular boundary.

2R—40 centimeters; fractured andesite.

### ***Kautz Series***

#### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley walls, debris aprons, ridges, terraces

*Slope range:* 0 to 100 percent

*Elevation:* 490 to 1415 meters

*Mean annual precipitation:* 1805 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### **Soil Characteristics**

*Depth class:* Very deep

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Ashy, amorphic, frigid Andic Haplorthods

### **Typical Pedon**

Kautz ashy sandy loam ([fig. 26](#)) in an area of Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes; approximately 900 meters north of the Nisqually entrance; Mount Rainier National Park, Pierce County, Washington; 130 meters south and 105 meters east of the northwest corner of section 34, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.749026 degrees north and longitude 121.916809 degrees west (latitude 46 degrees, 44 minutes, 56 seconds north and longitude 121 degrees, 55 minutes, 1 second west), WGS 84; UTM 582 735 meters E, 5 177 845 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; few very fine and fine roots; very strongly acid (pH 4.5); abrupt smooth boundary.

Oe—2 to 8 centimeters; moderately decomposed plant material; common very fine and fine and few medium and coarse roots; very strongly acid (pH 4.5); abrupt smooth boundary.

E—8 to 15 centimeters; very dark gray (10YR 3/1) ashy sandy loam, gray (10YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 5 percent fine pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

Bs1—15 to 26 centimeters; dark reddish brown (5YR 3/4) ashy sandy loam, reddish brown (5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 5 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; moderately acid (pH 5.7); clear wavy boundary.

Bs2—26 to 76 centimeters; brown (7.5YR 5/4) par gravelly ashy loamy sand, light brown (7.5YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; 15 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; moderately acid (pH 5.7); clear wavy boundary.

2Bw1—76 to 120 centimeters; dark brown (7.5YR 3/3) gravelly ashy sandy loam, brown (7.5YR 5/3) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 5 percent fine andesite gravel, 20 percent medium and coarse andesite gravel, and 5 percent andesite cobbles; moderately acid (pH 5.9); clear wavy boundary.

2Bw2—120 to 150 centimeters; dark yellowish brown (10YR 3/4) very gravelly ashy sandy loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky

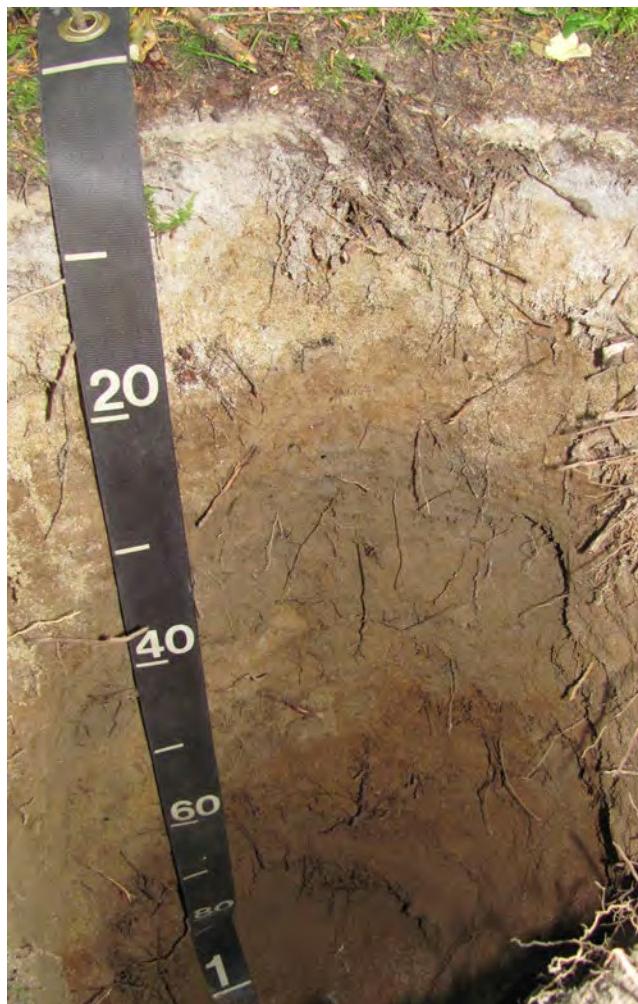


Figure 26.—Typical profile of a Kautz soil. Numerals on tape indicate centimeters.

structure; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 10 percent fine andesite gravel, 20 percent medium and coarse andesite gravel, and 10 percent andesite cobbles; moderately acid (pH 5.9).

## ***Laughingwater Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley walls, debris aprons, terraces

*Slope range:* 0 to 65 percent

*Elevation:* 610 to 1485 meters

*Mean annual precipitation:* 1295 to 2720 millimeters

*Mean annual air temperature:* 4 to 7 degrees C

*Frost-free period:* 60 to 90 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Ashy, amorphic Aquandic Haplocryods

### ***Typical Pedon***

Laughingwater ashby sandy loam ([fig. 27](#)) in an area of Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes; approximately 4 kilometers north of the Ohanapecosh Ranger Station, south of Olallie Creek, between the Cowlitz Divide Trail and the Ohanapecosh River; Mount Rainier National Park, Lewis County, Washington; 90 meters south and 755 meters east of the northwest corner of section 28, T. 15 N., R. 10 E.; Chinook Pass, Washington, U.S. Geological



Figure 27.—Typical profile of a Laughingwater soil. Numerals on tape indicate centimeters.

Soil Survey of Mount Rainier National Park, Washington

Survey Quadrangle; latitude 46.768061 degrees north and longitude 121.561539 degrees west (latitude 46 degrees, 46 minutes, 5 seconds north and longitude 121 degrees, 33 minutes, 42 seconds west), WGS 84; UTM 609 831 meters E, 5 180 394 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

- Oi—0 to 3 centimeters; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; few very fine and fine roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.
- E1—3 to 10 centimeters; very dark gray (7.5YR 3/1) ashy sandy loam, gray (7.5YR 5/1) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; strongly acid (pH 5.2); abrupt irregular boundary.
- E2—10 to 20 centimeters; dark gray (7.5YR 4/1) ashy loamy sand, gray (7.5YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; strongly acid (pH 5.2); abrupt irregular boundary.
- Bs1—20 to 32 centimeters; dark brown (7.5YR 3/3) ashy sandy loam, brown (7.5YR 5/3) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and medium and few coarse and very coarse roots; common very fine and fine interstitial pores; 10 percent pumice par gravel; moderately acid (pH 5.7); clear irregular boundary.
- Bs2—32 to 56 centimeters; dark brown (7.5YR 3/3) par gravelly ashy sandy loam, brown (7.5YR 5/3) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 15 percent pumice par gravel and 5 percent andesite gravel; moderately acid (pH 5.7); clear irregular boundary.
- Bs3—56 to 76 centimeters; dark brown (7.5YR 3/4) par gravelly ashy sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 20 percent pumice par gravel and 5 percent andesite gravel; moderately acid (pH 5.7); clear irregular boundary.
- 2Bg1—76 to 120 centimeters; dark brown (7.5YR 3/3) gravelly ashy sandy loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; few very fine and fine irregular pores; 10 percent fine irregular very dark gray (7.5YR 3/1) iron depletions with clear boundaries in matrix and 30 percent medium irregular strong brown (7.5YR 4/6) masses of oxidized iron with clear boundaries in matrix; 25 percent andesite gravel and 5 percent andesite cobbles; moderately acid (pH 5.9); clear wavy boundary.
- 2Bg2—120 to 150 centimeters; dark yellowish brown (10YR 3/4) very gravelly ashy sandy loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine irregular pores; 2 percent fine irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 25 percent medium irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; 30 percent andesite gravel and 10 percent andesite cobbles; moderately acid (pH 5.9).

## **Littletahoma Series**

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley walls, debris aprons, parklands, ridges

*Slope range:* 10 to 100 percent

*Elevation:* 1150 to 2125 meters

*Mean annual precipitation:* 1550 to 3430 millimeters

*Mean annual air temperature:* 1 to 6 degrees C

*Frost-free period:* 30 to 60 days

### **Soil Characteristics**

*Depth class:* Very deep

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Medial, glassy Humic Vitricryands

### **Typical Pedon**

Littletahoma paragravelly medial sandy loam ([fig. 28](#)) in an area of Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes; approximately 1.5 kilometers southeast of the Sunrise Ranger Station, on a ridge north of the White River, in Yakima Park; Mount Rainier National Park, Pierce County, Washington; 450 meters north and 90 meters west of the southeast corner of section 35, T. 17 N., R. 9 E.; White River Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.911726 degrees north and longitude 121.621874 degrees west (latitude 46 degrees, 54 minutes, 42 seconds north and longitude 121 degrees, 37 minutes, 19 seconds west), WGS 84; UTM 604 945 meters E, 5 196 276 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

A1—0 to 12 centimeters; black (10YR 2/1) paragravelly medial sandy loam, very dark gray (10YR 3/1) dry; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine interstitial pores; 15 percent pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

A2—12 to 70 centimeters; very dark brown (10YR 2/2) paragravelly medial sandy loam, very dark grayish brown (10YR 3/2) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; many very fine and fine interstitial pores; 20 percent pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

A3—70 to 90 centimeters; dark brown (10YR 3/3) paragravelly medial sandy loam, brown (10YR 4/3) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; many very fine and fine interstitial pores; 20 percent pumice par gravel; strongly acid (pH 5.2); clear irregular boundary.

Bw1—90 to 110 centimeters; dark yellowish brown (10YR 3/4) paragravelly medial fine sandy loam, yellowish brown (10YR 5/4) dry; moderate coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 20 percent pumice par gravel; strongly acid (pH 5.4); clear wavy boundary.

2Bw2—110 to 150 centimeters; dark yellowish brown (10YR 3/6) gravelly medial sandy loam, yellowish brown (10YR 5/6) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine irregular pores; 20 percent andesite gravel and 10 percent andesite cobbles; strongly acid (pH 5.4).



Figure 28.—Typical profile of a Littletahoma soil. Numerals on tape indicate centimeters.

## **Longmire Series**

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Valley walls, debris aprons, debris cones, ridges, talus slopes, terraces

*Slope range:* 0 to 100 percent

*Elevation:* 550 to 1755 meters

*Mean annual precipitation:* 1295 to 2870 millimeters

*Mean annual air temperature:* 3 to 7 degrees C

*Frost-free period:* 60 to 90 days

### **Soil Characteristics**

*Depth class:* Very deep

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Ashy, amorphic Andic Haplocryods

### **Typical Pedon**

Longmire ashy sandy loam ([fig. 29](#)) in an area of Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes; approximately 1750 meters southeast of the Box Canyon overlook and 150 meters east of Stevens Canyon Road; Mount Rainier National Park, Lewis County, Washington; 85 meters south and 555 meters west of the northeast corner of section 36, T. 15 N., R. 9 E.; Chinook Pass, Washington, U.S. Geological Survey Quadrangle; latitude 46.75394 degrees north and longitude 121.62027 degrees west (latitude 46 degrees, 45 minutes, 14 seconds north and longitude 121 degrees, 37 minutes, 13 seconds west), WGS 84; UTM 605 374 meters E, 5 178 745 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

Oe—2 to 4 centimeters; moderately decomposed plant material; common very fine and few fine to coarse roots; very strongly acid (pH 4.5); abrupt wavy boundary.

E—4 to 7 centimeters; very dark gray (10YR 3/1) ashy sandy loam, gray (10YR 5/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky



**Figure 29.—Typical profile of a Longmire soil. Numerals on tape indicate centimeters.**

and nonplastic; few very fine and medium roots; common fine interstitial pores; 5 percent fine pumice par gravel and 5 percent medium and coarse pumice par gravel; strongly acid (pH 5.2); abrupt irregular boundary.

Bs1—7 to 19 centimeters; dark brown (7.5YR 3/2) ashy loamy sand, brown (7.5YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine to coarse roots; common fine interstitial pores; 5 percent fine pumice par gravel; moderately acid (pH 5.7); clear wavy boundary.

Bs2—19 to 35 centimeters; dark brown (7.5YR 3/2) par gravelly ashy sandy loam, brown (7.5YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common fine interstitial pores; 5 percent fine pumice par gravel and 15 percent medium and coarse pumice par gravel; moderately acid (pH 5.7); clear irregular boundary.

Bs3—35 to 52 centimeters; dark brown (10YR 3/3) ashy loamy coarse sand, brown (10YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and very coarse and common fine and medium roots; common fine interstitial pores; 10 percent fine pumice par gravel; moderately acid (pH 5.7); clear wavy boundary.

2Bw1—52 to 96 centimeters; dark brown (7.5YR 3/3) gravelly ashy sandy loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common fine interstitial pores; 5 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 5 percent andesite cobbles; moderately acid (pH 5.9); clear wavy boundary.

2Bw2—96 to 111 centimeters; dark brown (7.5YR 3/4) very gravelly ashy coarse sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine interstitial pores; 10 percent fine andesite gravel, 20 percent medium and coarse andesite gravel, and 10 percent andesite cobbles; moderately acid (pH 5.9); clear wavy boundary.

2Bw3—111 to 150 centimeters; dark brown (7.5YR 3/4) very cobbley ashy coarse sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine irregular pores; 10 percent fine andesite gravel, 20 percent medium and coarse andesite gravel, 15 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.9).

## Meany Series

### Setting

*Landscape:* Cascade Mountains

*Landform:* Depressions of cirque floors and valley floors

*Slope range:* 5 to 25 percent

*Elevation:* 1400 to 2390 meters

*Mean annual precipitation:* 2260 to 3935 millimeters

*Mean annual air temperature:* 1 to 4 degrees C

*Frost-free period:* 5 to 45 days

### Soil Characteristics

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Mixed volcanic ash and glacial till

*Taxonomic class:* Medial-skeletal, glassy, nonacid Typic Cryaquands

### **Typical Pedon**

Meany extremely cobbly medial coarse sandy loam in an area of Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes; approximately 2.5 kilometers northeast of the Paradise Ranger Station, at the headwaters of Stevens Creek, below Paradise and Williwakas Glaciers; Mount Rainier National Park, Pierce County, Washington; 250 meters north and 695 meters east of the southwest corner of section 8, T. 15 N., R. 9 E.; Mount Rainier East, Washington, U.S. Geological Survey Quadrangle; latitude 46.800349 degrees north and longitude 121.709734 degrees west (latitude 46 degrees, 48 minutes, 1 second north and longitude 121 degrees, 42 minutes, 35 seconds west), WGS 84; UTM 598 457 meters E, 5 183 786 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

A—0 to 21 centimeters; very dark grayish brown (10YR 3/2) extremely cobbly medial coarse sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 2 percent fine faint irregular dark grayish brown (10YR 4/2) iron depletions throughout and 5 percent fine distinct irregular dark brown (7.5YR 3/4) masses of oxidized iron throughout; 35 percent andesite gravel, 20 percent andesite cobbles, and 5 percent andesite stones; strongly acid (pH 5.4); abrupt wavy boundary.

Bg1—21 to 72 centimeters; dark gray (10YR 4/1) extremely gravelly medial coarse sandy loam, gray (10YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 2 percent fine faint irregular grayish brown (10YR 5/2) iron depletions throughout and 5 percent fine prominent irregular dark brown (7.5YR 3/4) masses of oxidized iron throughout; 45 percent andesite gravel, 15 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.6); clear wavy boundary.

Bg2—72 to 104 centimeters; gray (10YR 5/1) extremely cobbly medial coarse sandy loam, gray (10YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine interstitial pores; 2 percent fine faint irregular grayish brown (10YR 5/2) iron depletions throughout and 5 percent fine distinct irregular dark yellowish brown (10YR 4/4) masses of oxidized iron throughout; 30 percent andesite gravel, 25 percent andesite cobbles, and 10 percent andesite stones; moderately acid (pH 5.8); clear wavy boundary.

Bg3—104 to 150 centimeters; dark gray (2.5Y 4/1) extremely cobbly medial coarse sandy loam, gray (2.5Y 5/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine interstitial pores; 2 percent fine faint irregular dark grayish brown (2.5Y 4/2) iron depletions throughout and 5 percent fine prominent irregular dark yellowish brown (10YR 4/4) masses of oxidized iron throughout; 40 percent andesite gravel, 30 percent andesite cobbles, and 10 percent andesite stones; moderately acid (pH 5.8).

## **Mountwow Series**

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Cirques, cirque floors, valley floors, valley walls, debris aprons, parklands, ridges

*Slope range:* 0 to 55 percent

*Elevation:* 1110 to 2390 meters

*Mean annual precipitation:* 1550 to 3935 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium

*Taxonomic class:* Medial, glassy, acid Thaptic Cryaquands

### ***Typical Pedon***

Mountwow medial sandy loam ([fig. 30](#)) in an area of Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes; approximately 10 kilometers northwest of the Ohanapecosh Ranger Station, along Wonderland Trail, on the Cowlitz Divide between Nickel Creek and the Ohanapecosh River; Mount Rainier National Park, Pierce County, Washington; 300 meters north and 710 meters west of the southeast



Figure 30.—Typical profile of a Mountwow soil. Numerals on tape indicate centimeters.

Soil Survey of Mount Rainier National Park, Washington

corner of section 1, T. 15 N., R. 9 E.; Chinook Pass, Washington, U.S. Geological Survey Quadrangle; latitude 46.815208 degrees north and longitude 121.622868 degrees west (latitude 46 degrees, 48 minutes, 55 seconds north and longitude 121 degrees, 37 minutes, 22 seconds west), WGS 84; UTM 605 057 meters E, 5 185 550 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

A—2 to 10 centimeters; very dark grayish brown (10YR 3/2) medial sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine and fine interstitial pores; strongly acid (pH 5.2); abrupt wavy boundary.

Bw1—10 to 14 centimeters; dark brown (7.5YR 3/3) paragravelly medial coarse sandy loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; 10 percent fine pumice paragravel and 10 percent medium and coarse pumice paragravel; strongly acid (pH 5.2); abrupt wavy boundary.

Bw2—14 to 26 centimeters; dark grayish brown (10YR 4/2) medial fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 10 percent fine pumice paragravel; strongly acid (pH 5.2); clear wavy boundary.

Bw3—26 to 37 centimeters; yellowish brown (10YR 5/4) medial loamy sand, very pale brown (10YR 7/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 5 percent fine pumice paragravel and 5 percent medium and coarse pumice paragravel; strongly acid (pH 5.2); abrupt wavy boundary.

Agb1—37 to 44 centimeters; very dark brown (10YR 2/2) medial sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine irregular pores; 2 percent gray (10YR 5/1) iron depletions in matrix and 4 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; strongly acid (pH 5.2); abrupt wavy boundary.

Bgb1—44 to 51 centimeters; dark brown (7.5YR 3/4) paragravelly medial sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 4 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; 10 percent fine pumice paragravel and 10 percent medium and coarse pumice paragravel; strongly acid (pH 5.2); clear wavy boundary.

Bgb2—51 to 60 centimeters; dark brown (7.5YR 3/3) medial coarse sandy loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 4 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; 10 percent fine pumice paragravel; strongly acid (pH 5.2); abrupt wavy boundary.

Bgb3—60 to 66 centimeters; strong brown (7.5YR 5/6) medial fine sandy loam, reddish yellow (7.5YR 7/6) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 2 percent gray (10YR 5/1) iron depletions in matrix and 4 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; strongly acid (pH 5.2); abrupt smooth boundary.

2Agb2—66 to 85 centimeters; very dark brown (10YR 2/2) medial sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very

friable, nonsticky and nonplastic; few very fine roots; common very fine and fine irregular pores; 2 percent gray (10YR 5/1) iron depletions in matrix and 4 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; strongly acid (pH 5.4); abrupt wavy boundary.

2Bgb4—85 to 120 centimeters; dark yellowish brown (10YR 3/4) very gravelly medial sandy loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 2 percent gray (10YR 5/1) iron depletions in matrix and 4 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; 15 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 15 percent andesite cobbles; strongly acid (pH 5.4); clear wavy boundary.

2Bgb5—120 to 150 centimeters; dark yellowish brown (10YR 3/4) very gravelly medial sandy loam, yellowish brown (10YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 2 percent gray (10YR 5/1) iron depletions in matrix and 4 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; 15 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 20 percent andesite cobbles; strongly acid (pH 5.4).

## **Mysticlake Series**

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley walls, debris aprons, terraces

*Slope range:* 5 to 55 percent

*Elevation:* 1015 to 2045 meters

*Mean annual precipitation:* 1345 to 3175 millimeters

*Mean annual air temperature:* 2 to 7 degrees C

*Frost-free period:* 30 to 60 days

### **Soil Characteristics**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Medial, glassy, acid Typic Cryaqueands

### **Typical Pedon**

Mysticlake medial sandy loam ([fig. 31](#)) in an area of Owyhigh-Mysticlake-Williwakas complex, 5 to 50 percent slopes; approximately 5 kilometers southwest of the White River Ranger Station, in the Owyhigh Lakes basin; Mount Rainier National Park, Pierce County, Washington; 730 meters south and 640 meters east of the northwest corner of section 20, T. 16 N., R. 10 E.; Chinook Pass, Washington, U.S. Geological Survey Quadrangle; latitude 46.863729 degrees north and longitude 121.584214 degrees west (latitude 46 degrees, 51 minutes, 49 seconds north and longitude 121 degrees, 35 minutes, 3 seconds west), WGS 84; UTM 607 908 meters E, 5 190 994 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 1 centimeter; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.



Figure 31.—Typical profile of a Mysticlake soil. Numerals on tape indicate centimeters.

Oe—1 to 3 centimeters; moderately decomposed plant material; common very fine and fine roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.

A1—3 to 6 centimeters; black (10YR 2/1) medial sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and medium and few coarse roots; common very fine and fine interstitial pores; 5 percent pumice paragavel; strongly acid (pH 5.2); abrupt smooth boundary.

A2—6 to 20 centimeters; dark brown (10YR 3/3) medial sandy loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and medium roots; common very fine and fine interstitial pores; strongly acid (pH 5.2); abrupt irregular boundary.

Bw—20 to 32 centimeters; dark brown (7.5YR 3/4) paragravelly medial coarse sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots and common very fine roots; many very fine and fine interstitial pores; 20 percent pumice paragavel; strongly acid (pH 5.2); abrupt irregular boundary.

- Bg1—32 to 48 centimeters; very dark grayish brown (10YR 3/2) medial fine sandy loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; few very fine and fine irregular pores; 20 percent medium irregular dark gray (10YR 4/1) iron depletions with clear boundaries in matrix and 40 percent medium irregular dark yellowish brown (10YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.
- Bg2—48 to 70 centimeters; dark yellowish brown (10YR 3/4) medial sandy loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 10 percent fine irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 10 percent medium irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; strongly acid (pH 5.4); clear wavy boundary.
- Bg3—70 to 120 centimeters; dark brown (10YR 3/3) medial fine sandy loam, brown (10YR 5/3) dry; strong coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 10 percent medium irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 25 percent medium irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; 10 percent pumice par gravel; strongly acid (pH 5.4); gradual wavy boundary.
- 2Bg4—120 to 150 centimeters; dark brown (10YR 3/3) gravelly medial sandy loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine and fine irregular pores; 10 percent medium irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 25 percent medium irregular strong brown (7.5YR 4/6) masses of oxidized iron with clear boundaries in matrix; 15 percent gravel and 10 percent cobbles; strongly acid (pH 5.4).

## Narada Series

### Setting

*Landscape:* Cascade river valleys  
*Landform:* Flood plains, terraces  
*Slope range:* 0 to 25 percent  
*Elevation:* 630 to 1485 meters  
*Mean annual precipitation:* 1345 to 2720 millimeters  
*Mean annual air temperature:* 4 to 7 degrees C  
*Frost-free period:* 60 to 90 days

### Soil Characteristics

*Depth class:* Very deep  
*Drainage class:* Moderately well drained  
*Capacity to transmit water (Ksat):* High or very high  
*Parent material:* Alluvium derived from andesite mixed with volcanic ash  
*Taxonomic class:* Ashy, glassy Aquandic Dystrocryepts

### Typical Pedon

Narada ash very fine sandy loam ([fig. 32](#)) in an area of Flett-Narada complex, 0 to 25 percent slopes; approximately 3.3 kilometers north of State Route 706,

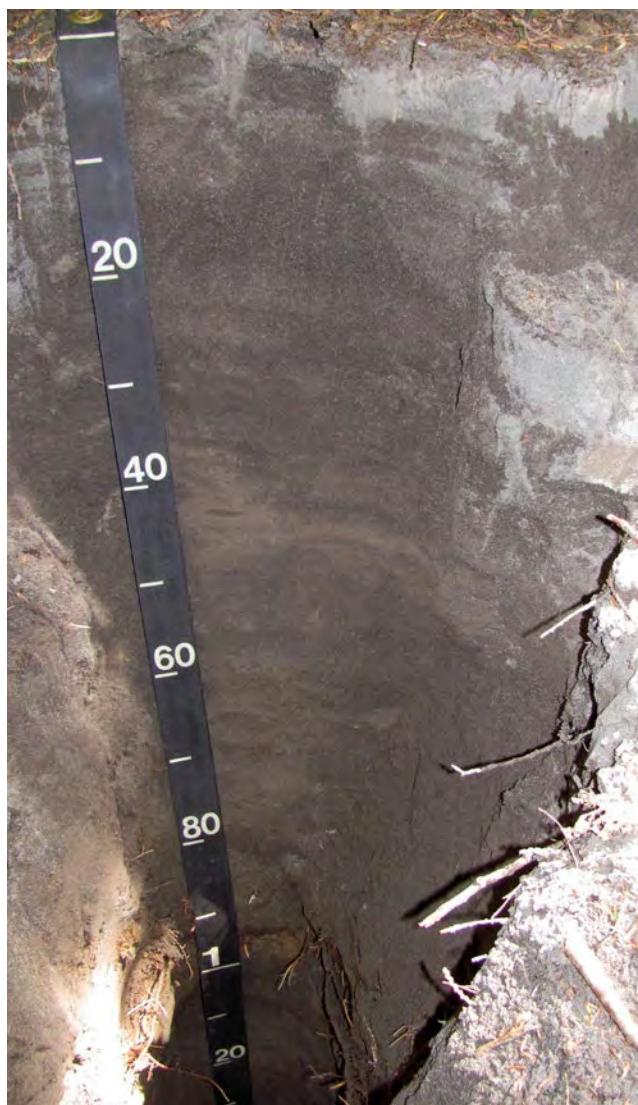


Figure 32.—Typical profile of a Narada soil. Numerals on tape indicate centimeters.

along West Side Road; Mount Rainier National Park, Pierce County, Washington; 285 meters north and 60 meters west of the southeast corner of section 23, T. 14 N., R. 7 E.; Mount Wow, Washington, U.S. Geological Survey Quadrangle; latitude 46.76694 degrees north and longitude 121.87720 degrees west (latitude 46 degrees, 46 minutes, 1 second north and longitude 121 degrees, 52 minutes, 38 seconds west), WGS 84; UTM 585 732 meters E, 5 179 877 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oe—0 to 3 centimeters; moderately decomposed plant material; common very fine and fine and few medium and coarse roots; very strongly acid (pH 4.5); clear wavy boundary.

A—3 to 7 centimeters; very dark brown (10YR 2/2) ashy very fine sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine to coarse roots; common fine irregular pores; 5 percent fine gravel; strongly acid (pH 5.4); clear wavy boundary.

AB—7 to 51 centimeters; very dark gray (10YR 3/1) ashy coarse sandy loam, gray (10YR 5/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine irregular pores; strongly acid (pH 5.4); abrupt smooth boundary.

Bw—51 to 75 centimeters; black (10YR 2/1) ashy coarse sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine irregular pores; 5 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels; strongly acid (pH 5.4); abrupt smooth boundary.

Bg1—75 to 90 centimeters; black (10YR 2/1) ashy loamy very fine sand, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine interstitial pores; 5 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels and 2 percent gray (10YR 6/1) iron depletions in matrix; strongly acid (pH 5.4); abrupt wavy boundary.

Bg2—90 to 110 centimeters; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; 5 percent yellowish red (5YR 4/6) masses of oxidized iron with diffuse boundaries along root channels and 2 percent gray (10YR 6/1) iron depletions in matrix; 10 percent fine gravel, 10 percent medium and coarse gravel, and 5 percent cobbles; moderately acid (pH 5.7); abrupt wavy boundary.

Bg3—110 to 150 centimeters; dark grayish brown (10YR 4/2) gravelly ashy sandy loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine irregular pores; 5 percent yellowish red (5YR 4/6) masses of oxidized iron with diffuse boundaries along root channels and 2 percent gray (10YR 6/1) iron depletions in matrix; 10 percent fine gravel, 15 percent medium and coarse gravel, and 5 percent cobbles; moderately acid (pH 5.7).

## ***Ohanapecosh Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley walls, bedrock benches, debris aprons, ridges

*Slope range:* 10 to 100 percent

*Elevation:* 550 to 1800 meters

*Mean annual precipitation:* 1295 to 2870 millimeters

*Mean annual air temperature:* 3 to 7 degrees C

*Frost-free period:* 60 to 90 days

### ***Soil Characteristics***

*Depth class:* Shallow to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium over andesite

*Taxonomic class:* Ashy, amorphous Lithic Haplocryods

### ***Typical Pedon***

Ohanapecosh ashy loamy sand ([fig. 33](#)) in an area of Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes; approximately 8 kilometers northeast of the Ohanapecosh Ranger Station, upslope from State Route 123, near Shriner Peak



Figure 33.—Typical profile of an Opanapecosh soil. Numerals on tape indicate centimeters.

Trail; Mount Rainier National Park, Pierce County, Washington; 390 meters north and 350 meters west of the southeast corner of section 9, T. 15 N., R. 10 E.; Chinook Pass, Washington, U.S. Geological Survey Quadrangle; latitude 46.801261 degrees north and longitude 121.554850 degrees west (latitude 46 degrees, 48 minutes, 5 seconds north and longitude 121 degrees, 33 minutes, 17 seconds west), WGS 84; UTM 610 274 meters E, 5 184 093 meters E, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 1 centimeter; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.

Oe—1 to 3 centimeters; moderately decomposed plant material; few very fine and fine roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.

E—3 to 14 centimeters; dark gray (7.5YR 4/1) ashy loamy sand, gray (7.5YR 5/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and medium roots; common very fine and fine interstitial pores; 5 percent pumice par gravel; strongly acid (pH 5.2); abrupt irregular boundary.

Bs1—14 to 30 centimeters; dark brown (7.5YR 3/4) par gravelly ashy sandy loam, brown (7.5YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine to coarse roots; many very fine and fine interstitial pores; 20 percent pumice par gravel; moderately acid (pH 5.7); clear irregular boundary.

Bs2—30 to 45 centimeters; dark brown (7.5YR 3/3) par gravelly ashy sandy loam, brown (7.5YR 5/3) dry; moderate coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 20 percent pumice par gravel and 5 percent andesite cobbles; moderately acid (pH 5.7); abrupt irregular boundary.

2R—45 centimeters; fractured andesite.

## Owyhigh Series

### Setting

Landscape: Cascade Mountains

Landform: Cirques, valley walls, bedrock benches, debris aprons, ridges

Slope range: 5 to 100 percent

Elevation: 980 to 2170 meters

Mean annual precipitation: 1345 to 3175 millimeters

Mean annual air temperature: 2 to 7 degrees C

Frost-free period: 30 to 60 days

### Soil Characteristics

Depth class: Moderately deep to lithic bedrock

Drainage class: Well drained

Capacity to transmit water (*K<sub>sat</sub>*): High or very high

Parent material: Volcanic ash and colluvium over andesite

Taxonomic class: Medial, glassy Andic Hapl cryo soils

### Typical Pedon

Owyhigh medial sandy loam (fig. 34) in an area of Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes; approximately 1 kilometer southwest of Deadwood Lakes, near Chinook Pass on State Route 41; Mount Rainier National Park, Pierce County, Washington; 630 meters south and 100 meters west of the northeast corner of section 15, T. 16 N., R. 10 E.; White River Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.878999 degrees north and longitude 121.530725 degrees west (latitude 46 degrees, 52 minutes, 44 seconds north and longitude 121 degrees, 31 minutes, 51 seconds west), WGS 84; UTM 611 954 meters E, 5 192 766 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 1 centimeter; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.

Oe—1 to 6 centimeters; moderately decomposed plant material; common very fine and fine and few medium roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

E—6 to 18 centimeters; dark brown (7.5YR 3/2) medial sandy loam, pinkish gray (7.5YR 6/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky



Figure 34.—Typical profile of an Owyhigh soil. Numerals on tape indicate centimeters.

and nonplastic; many very fine and fine, common medium, and few coarse roots; common very fine and fine interstitial pores; 5 percent fine pumice paragravel; very strongly acid (pH 4.7); abrupt wavy boundary.

Bs1—18 to 34 centimeters; dark brown (7.5YR 3/4) paragravely medial sandy loam, brown (7.5YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium to very coarse roots; common very fine and fine interstitial pores; 5 percent fine pumice paragravel and 20 percent medium and coarse pumice paragravel; strongly acid (pH 5.2); clear irregular boundary.

Bs2—34 to 52 centimeters; dark brown (7.5YR 3/4) paragravely medial sandy loam, brown (7.5YR 5/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 5 percent fine pumice paragravel and 15 percent medium and coarse pumice paragravel; strongly acid (pH 5.2); clear wavy boundary.

Bs3—52 to 80 centimeters; brown (7.5YR 4/4) paragravely medial sandy loam, brown (7.5YR 5/4) dry; moderate coarse subangular blocky structure; slightly

hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 10 percent fine to coarse pumice paragravel, 5 percent fine to coarse subangular andesite gravel, and 5 percent subangular andesite cobbles; strongly acid (pH 5.4); abrupt irregular boundary.  
2R—80 centimeters; fractured andesite.

## Sarvant Series

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley walls, bedrock benches, parklands

*Slope range:* 10 to 100 percent

*Elevation:* 1110 to 2340 meters

*Mean annual precipitation:* 1550 to 3935 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### **Soil Characteristics**

*Depth class:* Moderately deep to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium over andesite

*Taxonomic class:* Medial-skeletal, glassy Humic Vitricryands

### **Typical Pedon**

Sarvant gravelly medial sandy loam ([fig. 35](#)) in an area of Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes; approximately 8 kilometers northwest of Longmire, on Emerald Ridge, between the South Puyallup River and Tahoma Creek; Mount Rainier National Park, Pierce County, Washington; 205 meters south and 565 meters west of the northeast corner of section 6, T. 15 N., R. 8 E.; Mount Rainier West, Washington, U.S. Geological Survey Quadrangle; latitude 46.818623 degrees north and longitude 121.842430 degrees west (latitude 46 degrees, 49 minutes, 7 seconds north and longitude 121 degrees, 50 minutes, 33 seconds west), WGS 84; UTM 588 302 meters E, 5 185 660 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

A1—0 to 9 centimeters; black (10YR 2/1) gravelly medial sandy loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine to coarse roots; many very fine and fine interstitial pores; 20 percent andesite gravel and 5 percent andesite cobbles; strongly acid (pH 5.2); clear wavy boundary.

A2—9 to 36 centimeters; very dark brown (7.5YR 2.5/2) very gravelly medial sandy loam, dark brown (7.5YR 3/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 40 percent andesite gravel and 10 percent andesite cobbles; strongly acid (pH 5.2); clear wavy boundary.

Bw—36 to 65 centimeters; dark brown (7.5YR 3/4) very gravelly medial sandy loam, brown (7.5YR 5/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine and medium roots; common very fine and fine irregular pores; 25 percent andesite gravel and 15 percent andesite cobbles; strongly acid (pH 5.4); abrupt irregular boundary.

2R—65 centimeters; fractured andesite.



Figure 35.—Typical profile of a Sarvant soil. Numerals on tape indicate centimeters.

## ***Sheepskull Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley floors, lahars, moraines, outwash terraces

*Slope range:* 10 to 100 percent

*Elevation:* 975 to 2420 meters

*Mean annual precipitation:* 2160 to 3935 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### ***Soil Characteristics***

*Depth class:* Moderately deep to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Till and lahar deposits over andesite

*Taxonomic class:* Ashy-skeletal, glassy Typic Vitricryands

### ***Typical Pedon***

Sheepskull very gravelly ashly sandy loam ([fig. 36](#)) in an area of Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes; south of the South Puyallup River, along Wonderland Trail, between Emerald Ridge and South Puyallup River Campground; Mount Rainier National Park, Pierce County, Washington; 275 meters south and 15 meters east of the northwest corner of section 6, T. 15 N., R. 8 E.; Mount Rainier West, Washington, U.S. Geological Survey Quadrangle; latitude 46.817974 degrees north and longitude 121.855211 degrees west (latitude 46 degrees,



Figure 36.—Typical profile of a Sheepskull soil. Numerals on tape indicate centimeters.

## Soil Survey of Mount Rainier National Park, Washington

49 minutes, 5 seconds north and longitude 121 degrees, 51 minutes, 19 seconds west), WGS 84; UTM 587 328 meters E, 5 185 573 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

A1—2 to 30 centimeters; black (10YR 2/1) very gravelly ashy sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, common fine and medium, and few coarse roots; common very fine and fine interstitial pores; 25 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 15 percent andesite cobbles; moderately acid (pH 5.7); clear wavy boundary.

A2—30 to 64 centimeters; black (10YR 2/1) extremely cobbly ashy sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and few fine and medium roots; common very fine and fine interstitial pores; 15 percent fine andesite gravel, 20 percent medium and coarse andesite gravel, 20 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.7); abrupt irregular boundary.

2R—64 centimeters; andesite.

## ***Sluiskin Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley floors, valley walls, lahars, moraines, bedrock benches, outwash terraces, ridges, talus slopes

*Slope range:* 10 to 100 percent

*Elevation:* 975 to 2420 meters

*Mean annual precipitation:* 1395 to 3685 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### ***Soil Characteristics***

*Depth class:* Shallow to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Till and lahar deposits over andesite

*Taxonomic class:* Ashy-skeletal, glassy Lithic Vitricryands

### ***Typical Pedon***

Sluiskin very gravelly ashy sandy loam ([fig. 37](#)) in an area of Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes; south of the South Puyallup River, along Wonderland Trail between Emerald Ridge and South Puyallup River Campground; Mount Rainier National Park, Pierce County, Washington; 300 meters south and 45 meters west of the northeast corner of section 1, T. 15 N., R. 7 E.; Mount Rainier West, Washington, U.S. Geological Survey Quadrangle; latitude 46.817746 degrees north and longitude 121.856011 degrees west (latitude 46 degrees, 49 minutes, 4 seconds north and longitude 121 degrees, 51 minutes, 22 seconds west), WGS 84; UTM 587 267 meters E, 5 185 547 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

A1—2 to 21 centimeters; very dark brown (10YR 2/2) very gravelly ashy sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure;



Figure 37.—Typical profile of a Sluiskin soil. Numerals on tape indicate centimeters.

soft, very friable, nonsticky and nonplastic; many very fine and common fine and medium roots; common very fine and fine interstitial pores; 20 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 15 percent andesite cobbles; moderately acid (pH 5.7); clear wavy boundary.

A2—21 to 33 centimeters; very dark brown (10YR 2/2) very gravelly ashy sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; 15 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 10 percent andesite cobbles; moderately acid (pH 5.7); abrupt irregular boundary.

2R—33 centimeters; andesite.

## ***Summerland Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Glacial-valley walls, debris cones, talus slopes

*Slope range:* 15 to 100 percent

*Elevation:* 690 to 2420 meters

*Mean annual precipitation:* 1395 to 3685 millimeters

*Mean annual air temperature:* -1 to 7 degrees C

*Frost-free period:* 5 to 90 days

### **Soil Characteristics**

*Depth class:* Very deep

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* Very high

*Parent material:* Mixed colluvium and volcanic ash

*Taxonomic class:* Ashy-skeletal, amorphic Humic Vitricryands

### **Typical Pedon**

Summerland extremely stony ashy sandy loam ([fig. 38](#)) in an area of Summerland-Longmire complex, 15 to 100 percent slopes; approximately 5 kilometers northeast of the Nisqually entrance at the northern gated closure of West Side Road; Mount



Figure 38.—Typical profile of a Summerland soil. Numerals on tape indicate centimeters.

## Soil Survey of Mount Rainier National Park, Washington

Rainier National Park, Pierce County, Washington; 230 meters south and 580 meters west of the northeast corner of section 23, T. 15 N., R. 7 E.; Mount Wow, Washington, U.S. Geological Survey Quadrangle; latitude 46.77672 degrees north and longitude 121.88403 degrees west (latitude 46 degrees, 46 minutes, 36 seconds north and longitude 121 degrees, 53 minutes, 3 seconds west), WGS 84; UTM 585 195 meters E, 5 180 957 meters N, zone 10N, NAD83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; common very fine and few fine and medium roots; very strongly acid (pH 4.5); clear wavy boundary.

A—2 to 38 centimeters; dark brown (10YR 3/3) extremely stony ashy sandy loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse roots; common fine interstitial pores; 10 percent fine gravel, 25 percent medium and coarse gravel, 10 percent cobbles, 10 percent stones, and 5 percent boulders; very strongly acid (pH 4.9); clear wavy boundary.

Bw1—38 to 84 centimeters; brown (10YR 4/3) extremely bouldery ashy sandy loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few medium and coarse roots; common fine interstitial pores; 10 percent fine gravel, 25 percent medium and coarse gravel, 15 percent cobbles, 5 percent stones, and 5 percent boulders; strongly acid (pH 5.4); clear irregular boundary.

Bw2—84 to 123 centimeters; brown (7.5YR 4/2) extremely stony ashy sandy loam, pinkish gray (7.5YR 6/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common fine interstitial pores; 15 percent fine gravel, 30 percent medium and coarse gravel, 10 percent cobbles, 10 percent stones, and 5 percent boulders; strongly acid (pH 5.4); clear irregular boundary.

Bw3—123 to 150 centimeters; brown (7.5YR 4/3) extremely cobbly ashy sandy loam, light brown (7.5YR 6/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine interstitial pores; 15 percent fine gravel, 15 percent medium and coarse gravel, 25 percent cobbles, 10 percent stones, and 5 percent boulders; strongly acid (pH 5.4).

## Sunbeam Series

### ***Setting***

*Landscape:* Cascade Mountains, Cascade river valleys

*Landform:* Depressions of flood plains and terraces, swales of valley walls and debris aprons

*Slope range:* 0 to 10 percent

*Elevation:* 490 to 1415 meters

*Mean annual precipitation:* 1805 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash

*Taxonomic class:* Ashy, amorphic, nonacid, frigid Typic Vitraquands

### ***Typical Pedon***

Sunbeam mucky ashy sandy loam in an area of Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes; approximately 790 meters northeast of the Nisqually entrance, near Tenas Creek, on a slope between the Nisqually River and Mount Wow; Mount Rainier National Park, Pierce County, Washington; 720 meters south and 730 meters east of the northwest corner of section 34, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.743664 degrees north and longitude 121.908498 degrees west (latitude 46 degrees, 44 minutes, 37 seconds north and longitude 121 degrees, 54 minutes, 31 seconds west), WGS 84; UTM 583 377 meters E, 5 177 257 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 3 centimeters; slightly decomposed plant material; many fine interstitial pores; very strongly acid (pH 4.5); clear wavy boundary.

A—3 to 15 centimeters; black (10YR 2/1) mucky ashy sandy loam, very dark gray (10YR 3/1) dry; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and common fine to coarse roots; common very fine and fine irregular pores; 2 percent fine faint irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 5 percent fine distinct irregular dark yellowish brown (10YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; strongly acid (pH 5.4); clear wavy boundary.

Bg1—15 to 32 centimeters; brown (7.5YR 4/4) paragravelly ashy sandy loam, brown (7.5YR 5/4) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse roots; common very fine and fine interstitial pores; 5 percent fine faint irregular grayish brown (10YR 5/2) iron depletions with clear boundaries in matrix and 10 percent fine distinct irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; 20 percent pumice par gravel; strongly acid (pH 5.4); abrupt wavy boundary.

Bg2—32 to 52 centimeters; brown (7.5YR 4/4) paragravelly ashy sandy loam, light brown (7.5YR 6/4) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse and few very coarse roots; common very fine and fine irregular pores; 5 percent fine distinct irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 10 percent fine distinct irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; 10 percent pumice par gravel and 5 percent andesite gravel; moderately acid (pH 5.6); abrupt wavy boundary.

Bg3—52 to 80 centimeters; dark brown (7.5YR 3/2) ashy sandy loam, brown (7.5YR 5/2) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine to coarse roots; common very fine and fine irregular pores; 5 percent fine faint irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 20 percent fine faint irregular dark brown (10YR 3/3) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; moderately acid (pH 5.6); clear wavy boundary.

Bg4—80 to 150 centimeters; dark yellowish brown (10YR 3/4) ashy fine sandy loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and medium roots; few very fine and fine irregular pores; 20 percent fine distinct irregular very dark grayish brown (10YR 3/2) iron depletions with clear boundaries in matrix and 20 percent fine distinct irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; 5 percent andesite gravel; moderately acid (pH 5.8).

## Tamanos Series

### Setting

*Landscape:* Cascade Mountains  
*Landform:* Alpine glaciers  
*Slope range:* 10 to 65 percent  
*Elevation:* 1075 to 2205 meters  
*Mean annual precipitation:* 2300 to 3600 millimeters  
*Mean annual air temperature:* 0 to 5 degrees C  
*Frost-free period:* 5 to 45 days

### Soil Characteristics

*Depth class:* Moderately deep to permafrost  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* Very high  
*Parent material:* Colluvium over massive ice  
*Taxonomic class:* Ashy-skeletal, glassy, nonacid, subgelic Glacic Haplorthels

### Typical Pedon

Tamanos gravelly ashy loamy sand (fig. 39) in an area of Tamanos-Glaciers complex, 10 to 65 percent slopes; approximately 11 kilometers southeast of the Carbon River Ranger Station, at the terminus of Carbon Glacier; Mount Rainier National Park, Pierce County, Washington; 640 meters north and 315 meters east of the southwest corner of section 22, T. 17 N., R. 8 E.; Mowich Lake, Washington, U.S. Geological Survey Quadrangle; latitude 46.942203 degrees north and longitude



Figure 39.—Typical profile of a Tamanos soil exposed on a melt face of Carbon Glacier.

121.787800 degrees west (latitude 46 degrees, 56 minutes, 32 seconds north and longitude 121 degrees, 47 minutes, 16 seconds west), WGS 84; UTM 592 257 meters E, 5 199 455 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

- A—0 to 20 centimeters; black (5YR 2.5/1) gravelly ashy loamy sand, very dark gray (5YR 3/1) dry; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 5 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 10 percent andesite cobbles; slightly acid (pH 6.4); clear wavy boundary.
- C—20 to 50 centimeters; very dark gray (5YR 3/1) very gravelly ashy loamy sand, gray (7.5YR 5/1) dry; single grain; loose, nonsticky and nonplastic; common very fine and fine interstitial pores; 10 percent fine andesite gravel, 20 percent medium and coarse andesite gravel, and 15 percent andesite cobbles; slightly acid (pH 6.4); abrupt wavy boundary.
- 2Wf—50 to 150 centimeters; massive glacial ice.

## **Tatoosh Series**

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley walls, bedrock benches, parklands, ridges, volcanic cones

*Slope range:* 10 to 100 percent

*Elevation:* 1110 to 3350 meters

*Mean annual precipitation:* 1550 to 4700 millimeters

*Mean annual air temperature:* -8 to 6 degrees C

*Frost-free period:* 0 to 60 days

### **Soil Characteristics**

*Depth class:* Shallow to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium over andesite

*Taxonomic class:* Medial, glassy Lithic Vitricryands

### **Typical Pedon**

Tatoosh paragravelly medial sandy loam ([fig. 40](#)) in an area of Chenuis-Sarvant complex, 25 to 100 percent slopes; approximately 1.5 kilometers southeast of the Sunrise Ranger Station, on a ridge north of the White River, Yakima Park; Mount Rainier National Park, Pierce County, Washington; 415 meters north and 255 meters west of the southeast corner of section 35, T. 17 N., R. 9 E.; White River Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.911458 degrees north and longitude 121.624047 degrees west (latitude 46 degrees, 54 minutes, 41 seconds north and longitude 121 degrees, 37 minutes, 27 seconds west), WGS 84; UTM 604 780 meters E, 5 196 244 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 1 centimeter; slightly decomposed plant material from grasses and forbs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

A1—1 to 6 centimeters; black (10YR 2/1) paragravelly medial sandy loam, very dark gray (10YR 3/1) dry; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and

fine interstitial pores; 20 percent pumice par gravel; strongly acid (pH 5.2); abrupt wavy boundary.

A2—6 to 22 centimeters; very dark brown (10YR 2/2) par gravelly medial sandy loam, very dark grayish brown (10YR 3/2) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine, common medium, and few coarse roots; many very fine and fine interstitial pores; 20 percent pumice par gravel and 10 percent andesite gravel; strongly acid (pH 5.2); clear wavy boundary.

Bw—22 to 46 centimeters; dark yellowish brown (10YR 3/4) par gravelly medial sandy loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine irregular pores; 20 percent pumice par gravel and 10 percent andesite gravel; strongly acid (pH 5.4); abrupt irregular boundary.

2R—46 centimeters; fractured andesite.



Figure 40.—Typical profile of a Tatoosh soil. Numerals on tape indicate centimeters.

## **Tipsoo Series**

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley walls, debris aprons, debris cones, ridges, talus slopes, terraces

*Slope range:* 5 to 100 percent

*Elevation:* 1010 to 2110 meters

*Mean annual precipitation:* 1345 to 3175 millimeters

*Mean annual air temperature:* 2 to 7 degrees C

*Frost-free period:* 30 to 60 days

### **Soil Characteristics**

*Depth class:* Very deep

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Medial, glassy Andic Haplocryods

### **Typical Pedon**

Tipsoo paragravelly medial sandy loam ([fig. 41](#)) in an area of Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes; approximately 6 kilometers west of Sunrise Visitor Center, above Wonderland Trail, on a ridge between Winthrop Glacier and Granite Creek; Mount Rainier National Park, Pierce County, Washington; 180 meters south and 780 meters east of the northwest corner of section 31, T. 17 N., R. 9 E.; Sunrise, Washington, U.S. Geological Survey Quadrangle; latitude 46.920492 degrees north and longitude 121.718411 degrees west (latitude 46 degrees, 55 minutes, 14 seconds north and longitude 121 degrees, 43 minutes, 6 seconds west), WGS 84; UTM 597 580 meters E, 5 197 125 meters E, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.

Oe—2 to 5 centimeters; moderately decomposed plant material; common very fine and fine and few medium roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

E—5 to 9 centimeters; very dark gray (7.5YR 3/1) paragravelly medial sandy loam, gray (7.5YR 6/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine, common medium, and few coarse roots; common very fine and fine interstitial pores; 5 percent fine pumice paragravel and 10 percent medium and coarse pumice paragravel; very strongly acid (pH 4.7); abrupt wavy boundary.

Bhs—9 to 42 centimeters; very dark brown (7.5YR 2.5/2) paragravelly medial sandy loam, dark brown (7.5YR 3/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium to very coarse roots; common very fine and fine interstitial pores; 5 percent fine pumice paragravel and 10 percent medium and coarse pumice paragravel; strongly acid (pH 5.2); abrupt irregular boundary.

Bs1—42 to 57 centimeters; dark brown (7.5YR 3/3) medial sandy loam, brown (7.5YR 4/3) dry; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse roots; common very fine and fine irregular pores; 5 percent fine pumice paragravel; strongly acid (pH 5.2); clear wavy boundary.



Figure 41.—Typical profile of a Tipsoo soil. Numerals on tape indicate centimeters.

Bs2—57 to 73 centimeters; brown (7.5YR 4/3) medial loamy sand, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 5 percent fine pumice par gravel; strongly acid (pH 5.2); clear irregular boundary.

2Bw1—73 to 110 centimeters; yellowish brown (10YR 5/6) gravelly medial sandy loam, brownish yellow (10YR 6/6) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 5 percent fine subangular andesite gravel, 10 percent medium and coarse subangular andesite gravel, and 5 percent subangular andesite cobbles; strongly acid (pH 5.4); gradual wavy boundary.

2Bw2—110 to 150 centimeters; dark yellowish brown (10YR 3/6) gravelly medial fine sandy loam, yellowish brown (10YR 5/6) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 10 percent fine subangular andesite gravel, 10 percent medium and coarse subangular andesite gravel, and 10 percent subangular andesite cobbles; strongly acid (pH 5.4).

## Tokaloo Series

### Setting

*Landscape:* Cascade Mountains  
*Landform:* Valley walls, debris aprons, terraces  
*Slope range:* 0 to 50 percent  
*Elevation:* 490 to 1415 meters  
*Mean annual precipitation:* 1805 to 2110 millimeters  
*Mean annual air temperature:* 5 to 7 degrees C  
*Frost-free period:* 90 to 130 days

### Soil Characteristics

*Depth class:* Very deep  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Taxonomic class:* Ashy, amorphic, nonacid, frigid Typic Vitraquands

### Typical Pedon

Tokaloo paragravelly ashy sandy loam ([fig. 42](#)) in an area of Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes; at the junction of the Nisqually House boundary trail and the south bank of Tenas Creek; Mount Rainier National Park, Pierce County, Washington; 180 meters south and 10 meters west of the northeast corner of section 33, T. 15 N., R. 7 E.; Sawtooth Ridge, Washington, U.S. Geological Survey Quadrangle; latitude 46.74859 degrees north and longitude 121.91832 degrees west (latitude 46 degrees, 44 minutes, 55 seconds north and longitude 121 degrees, 55 minutes, 6 seconds west), WGS 84; UTM 582 620 meters E, 5 177 795 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

Oe—2 to 5 centimeters; moderately decomposed plant material; common very fine and fine and few medium roots; very strongly acid (pH 4.5); clear wavy boundary.

A—5 to 10 centimeters; black (10YR 2/1) paragravelly ashy sandy loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 10 percent fine pumice paragravel and 5 percent medium and coarse pumice paragravel; very strongly acid (pH 4.9); abrupt wavy boundary.

Bw—10 to 25 centimeters; dark brown (7.5YR 3/3) paragravelly ashy coarse sandy loam, brown (7.5YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, common fine, and few medium to very coarse roots; common very fine and fine interstitial pores; 15 percent fine pumice paragravel and 5 percent medium and coarse pumice paragravel; strongly acid (pH 5.4); clear irregular boundary.

Bg1—25 to 74 centimeters; brown (7.5YR 4/2) paragravelly ashy loamy coarse sand, pinkish gray (7.5YR 6/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine to coarse roots; common very fine and fine interstitial pores; 10 percent yellowish red (5YR 4/6) masses of oxidized iron with diffuse boundaries along root channels and 2 percent grayish brown (10YR 5/2) iron depletions in matrix; 15 percent fine pumice paragravel and 10 percent medium and coarse pumice paragravel; strongly acid (pH 5.4); clear wavy boundary.

2Bg2—74 to 90 centimeters; very dark grayish brown (10YR 3/2) very gravelly ashy sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure;



Figure 42.—Typical profile of a Tokaloo soil. Numerals on tape indicate centimeters.

soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 5 percent yellowish red (5YR 4/6) masses of oxidized iron with diffuse boundaries along root channels and 3 percent grayish brown (10YR 5/2) iron depletions in matrix; 10 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 15 percent andesite cobbles; strongly acid (pH 5.4); clear wavy boundary.

2Bg3—90 to 150 centimeters; very dark grayish brown (10YR 3/2) very cobbly ashy sandy loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; 5 percent yellowish red (5YR 4/6) masses of oxidized iron with diffuse boundaries along root channels and 5 percent grayish brown (10YR 5/2) iron depletions in matrix; 10 percent fine andesite gravel, 10 percent medium and coarse andesite gravel, and 20 percent andesite cobbles; moderately acid (pH 5.6).

## ***Unicornpeak Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Cirques, cirque floors, valley walls, debris aprons, terraces

*Slope range:* 0 to 65 percent

*Elevation:* 1030 to 2140 meters

*Mean annual precipitation:* 1450 to 3175 millimeters

*Mean annual air temperature:* 1 to 7 degrees C

*Frost-free period:* 30 to 60 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Medial, glassy Aquandic Haplocryods

### ***Typical Pedon***

Unicornpeak medial sandy loam ([fig. 43](#)) in an area of Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes; approximately 2 kilometers southwest of Lake Eleanor and 5 kilometers east of Oliver Lake; Mount Rainier National Park, Pierce County, Washington; 60 meters south and 430 meters east of the northwest corner of section 9, T. 17 N., R. 9 E.; Sunrise, Washington, U.S. Geological Survey Quadrangle; latitude 46.979433 degrees north and longitude 121.678175 degrees west (latitude 46 degrees, 58 minutes, 46 seconds north and longitude 121 degrees, 40 minutes, 41 seconds west), WGS 84; UTM 600 530 meters E, 5 203 726 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material from deciduous shrubs, conifer needles, and twigs; many fine interstitial pores; very strongly acid (pH 4.5); abrupt smooth boundary.

Oe—2 to 6 centimeters; moderately decomposed plant material; common very fine to coarse roots; many fine interstitial pores; very strongly acid (pH 4.5); abrupt wavy boundary.

E—6 to 12 centimeters; very dark gray (7.5YR 3/1) medial sandy loam, gray (7.5YR 6/1) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to very coarse roots; common very fine and fine interstitial pores; 5 percent pumice par gravel; very strongly acid (pH 4.7); abrupt wavy boundary.

Bs1—12 to 32 centimeters; dark brown (7.5YR 3/3) medial sandy loam, brown (7.5YR 4/3) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse roots; common very fine and fine interstitial pores; 10 percent pumice par gravel; strongly acid (pH 5.2); abrupt irregular boundary.

Bs2—32 to 58 centimeters; dark brown (7.5YR 3/4) medial coarse sandy loam, brown (7.5YR 5/4) dry; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 5 percent pumice par gravel; strongly acid (pH 5.2); clear wavy boundary.

Bg1—58 to 72 centimeters; dark brown (10YR 3/3) medial fine sandy loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 25 percent medium dark grayish brown (10YR 4/2)



Figure 43.—Typical profile of a Unicornpeak soil. Numerals on tape indicate centimeters.

iron depletions with clear boundaries in matrix and 25 percent medium dark yellowish brown (10YR 3/4) masses of oxidized iron with diffuse boundaries in matrix; 5 percent andesite gravel; strongly acid (pH 5.2); clear irregular boundary.

Bg2—72 to 88 centimeters; brown (7.5YR 4/4) medial fine sandy loam, light brown (7.5YR 6/4) dry; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine irregular pores; 5 percent fine grayish brown (10YR 5/2) iron depletions with clear boundaries in matrix and 25 percent medium dark yellowish brown (10YR 3/6) masses of oxidized iron with clear boundaries in matrix; 10 percent andesite gravel; strongly acid (pH 5.4); gradual wavy boundary.

2Bg3—88 to 150 centimeters; dark brown (10YR 3/3) gravelly medial fine sandy loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; few very

fine and fine irregular pores; 2 percent fine dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 25 percent medium strong brown (7.5YR 4/6) masses of oxidized iron with clear boundaries in matrix; 20 percent andesite gravel and 10 percent andesite cobbles; strongly acid (pH 5.4).

## **Vantrump Series**

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley walls, debris aprons, debris cones, ridges, talus slopes, terraces

*Slope range:* 0 to 65 percent

*Elevation:* 550 to 1755 meters

*Mean annual precipitation:* 1295 to 2870 millimeters

*Mean annual air temperature:* 3 to 7 degrees C

*Frost-free period:* 60 to 90 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash over colluvium derived from andesite

*Taxonomic class:* Ashy, amorphic, acid Typic Cryaquands

### ***Typical Pedon***

Vantrump ashy sandy loam ([fig. 44](#)) in an area of Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes; along the east bank of the Muddy Fork of the Cowlitz River, north of the Box Canyon overlook; Mount Rainier National Park, Lewis County, Washington; 340 meters north and 215 meters west of the southeast corner of section 23, T. 15 N., R. 9 E.; Mount Rainier East, Washington, U.S. Geological Survey Quadrangle; latitude 46.773043 degrees north and longitude 121.637476 degrees west (latitude 46 degrees, 46 minutes, 23 seconds north and longitude 121 degrees, 38 minutes, 15 seconds west), WGS 84; UTM 604 024 meters E, 5 180 845 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

Oe—2 to 5 centimeters; moderately decomposed plant material; common very fine and few fine to coarse roots; very strongly acid (pH 4.5); clear wavy boundary.

A—5 to 25 centimeters; very dark gray (10YR 3/1) ashy sandy loam, gray (10YR 5/1) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine to coarse roots; common very fine and fine interstitial pores; strongly acid (pH 5.2); abrupt wavy boundary.

Bg1—25 to 49 centimeters; dark yellowish brown (10YR 4/4) ashy sandy loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; moderately hard, firm, nonsticky and nonplastic; common very fine and few fine to coarse roots; common very fine and fine interstitial pores; 5 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels and 5 percent gray (10YR 5/1) iron depletions in matrix; strongly acid (pH 5.2); clear wavy boundary.

Bg2—49 to 71 centimeters; dark yellowish brown (10YR 4/4) paragradeally ashy sandy loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; moderately hard, firm, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 10 percent dark reddish brown

(5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels and 15 percent dark grayish brown (10YR 4/2) iron depletions in matrix; 5 percent fine pumice par gravel; strongly acid (pH 5.2); abrupt wavy boundary.

Bg3—71 to 80 centimeters; dark yellowish brown (10YR 4/4) ashy fine sandy loam, light yellowish brown (10YR 6/4) dry; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 2 percent masses of oxidized iron that are dark reddish brown (5YR 3/4) moist and along root channels and 10 percent masses of reduced iron that are dark gray (10YR 4/1) moist and in matrix; 5 percent fine pumice par gravel; strongly acid (pH 5.2); abrupt smooth boundary.

2Bg4—80 to 101 centimeters; dark yellowish brown (10YR 4/4) very gravelly ashy loamy coarse sand, light yellowish brown (10YR 6/4) dry; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 2 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels and 5 percent dark gray (10YR 4/1) iron depletions in matrix;



Figure 44.—Typical profile of a Vantrump soil. Numerals on tape indicate centimeters.

15 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 5 percent andesite cobbles; strongly acid (pH 5.4); clear wavy boundary.  
2Bg5—101 to 150 centimeters; brown (10YR 4/3) very gravelly ashy sandy loam, pale brown (10YR 6/3) dry; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 2 percent dark reddish brown (5YR 3/4) masses of oxidized iron with diffuse boundaries along root channels and 10 percent gray (10YR 5/1) iron depletions in matrix; 15 percent fine andesite gravel, 15 percent medium and coarse andesite gravel, and 5 percent andesite cobbles; strongly acid (pH 5.4).

## ***Wahpenayo Series***

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Cirques, valley floors, valley walls, bedrock benches, debris aprons, parklands

*Slope range:* 5 to 55 percent

*Elevation:* 1210 to 2390 meters

*Mean annual precipitation:* 1550 to 3935 millimeters

*Mean annual air temperature:* -1 to 5 degrees C

*Frost-free period:* 5 to 60 days

### ***Soil Characteristics***

*Depth class:* Moderately deep to lithic bedrock

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash and colluvium over andesite

*Taxonomic class:* Medial, glassy, acid Typic Cryaquands

### ***Typical Pedon***

Wahpenayo paragravelly medial sandy loam ([fig. 45](#)) in an area of Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes; approximately 2.5 kilometers southeast of the Sunrise Ranger Station, along Sunrise Road, east of Yakima Park; Mount Rainier National Park, Pierce County, Washington; 185 meters north and 770 meters east of the southwest corner of section 36, T. 17 N., R. 9 E.; White River Park, Washington, U.S. Geological Survey Quadrangle; latitude 46.909316 degrees north and longitude 121.610665 degrees west (latitude 46 degrees, 54 minutes, 34 seconds north and longitude 121 degrees, 36 minutes, 38 seconds west), WGS 84; UTM 605 802 meters E, 5 196 023 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

A1—0 to 16 centimeters; very dark brown (10YR 2/2) paragravelly medial sandy loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 20 percent pumice paragravel; strongly acid (pH 5.2); clear irregular boundary.

A2—16 to 45 centimeters; very dark brown (10YR 2/2) paragravelly medial sandy loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 20 percent pumice paragravel; strongly acid (pH 5.2); abrupt wavy boundary.

Bg1—45 to 52 centimeters; very dark grayish brown (10YR 3/2) medial fine sandy loam, grayish brown (10YR 5/2) dry; moderate coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine to very coarse roots;

few very fine and fine irregular pores; 20 percent fine irregular dark gray (10YR 4/1) iron depletions with clear boundaries in matrix and 10 percent fine irregular dark yellowish brown (10YR 3/4) masses of oxidized iron with clear boundaries in matrix; strongly acid (pH 5.2); abrupt wavy boundary.

Bg2—52 to 64 centimeters; brown (10YR 4/3) medial loam, brown (10YR 5/3) dry; strong coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial



Figure 45.—Typical profile of a Wahpenayo soil. Numerals on tape indicate centimeters.

pores; 10 percent fine irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 20 percent medium irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; strongly acid (pH 5.2); abrupt wavy boundary.

Bg3—64 to 75 centimeters; dark yellowish brown (10YR 4/6) medial coarse sandy loam, light yellowish brown (10YR 6/4) dry; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine irregular pores; 10 percent fine irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 25 percent medium irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; strongly acid (pH 5.4); abrupt wavy boundary.

Bg4—75 to 90 centimeters; very dark brown (10YR 2/2) medial fine sandy loam, dark grayish brown (10YR 4/2) dry; strong coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine irregular pores; 10 percent medium irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 25 percent medium irregular strong brown (7.5YR 4/6) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel and 5 percent andesite gravel; strongly acid (pH 5.4); abrupt irregular boundary.

2R—90 centimeters; fractured andesite.

## Williwakas Series

### **Setting**

*Landscape:* Cascade Mountains

*Landform:* Depressions of cirque floors, swales of debris aprons, valley walls, cirques, parklands

*Slope range:* 0 to 15 percent

*Elevation:* 1015 to 2140 meters

*Mean annual precipitation:* 1345 to 3175 millimeters

*Mean annual air temperature:* 1 to 7 degrees C

*Frost-free period:* 30 to 60 days

### **Soil Characteristics**

*Depth class:* Very deep (more than 150 centimeters)

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Volcanic ash

*Taxonomic class:* Medial, glassy, acid Typic Cryaquands

### **Typical Pedon**

Williwakas medial sandy loam ([fig. 46](#)) in an area of Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes; approximately 1.3 kilometers east of the Paradise Ranger Station, on Mazama Ridge, between Paradise Creek and Stevens Creek; Mount Rainier National Park, Pierce County, Washington; 200 meters north and 5 meters west of the southeast corner of section 18, T. 15 N., R. 9 E.; Mount Rainier East, Washington, U.S. Geological Survey Quadrangle; latitude 46.785581 degrees north and longitude 121.718883 degrees west (latitude 46 degrees, 47 minutes, 8 seconds north and longitude 121 degrees, 43 minutes, 8 seconds west), WGS 84; UTM 597 786 meters E, 5 182 134 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; common very fine and fine interstitial pores; very strongly acid (pH 4.5); clear wavy boundary.

- A1—2 to 14 centimeters; very dark brown (10YR 2/2) medial sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine irregular pores; strongly acid (pH 5.2); clear irregular boundary.
- A2—14 to 26 centimeters; very dark grayish brown (10YR 3/2) medial loamy sand, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 20 percent fine faint irregular dark gray (10YR 4/1) iron depletions with clear boundaries in matrix and 5 percent fine distinct irregular dark yellowish brown (10YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice par gravel; strongly acid (pH 5.2); clear irregular boundary.
- A3—26 to 36 centimeters; very dark brown (10YR 2/2) medial sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine and fine irregular pores; 20 percent fine faint irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 10 percent fine faint irregular dark brown (10YR 3/3) masses of oxidized iron with clear boundaries in matrix; 10 percent pumice par gravel; strongly acid (pH 5.2); abrupt smooth boundary.



Figure 46.—Typical profile of a Williwakas soil. Numerals on tape indicate centimeters.

- Bg1—36 to 43 centimeters; grayish brown (10YR 5/2) medial fine sandy loam, light gray (10YR 7/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine and fine irregular pores; 10 percent fine faint irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 10 percent fine prominent irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; strongly acid (pH 5.2); abrupt smooth boundary.
- Bg2—43 to 55 centimeters; dark brown (10YR 3/3) medial sandy loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; few very fine and fine irregular pores; 30 percent fine faint irregular grayish brown (10YR 5/2) iron depletions with clear boundaries in matrix and 10 percent fine faint irregular dark yellowish brown (10YR 3/4) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice paragavel; strongly acid (pH 5.4); clear wavy boundary.
- Bg3—55 to 65 centimeters; brown (7.5YR 4/4) medial loamy sand, light brown (7.5YR 6/4) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine and fine interstitial pores; 5 percent fine distinct irregular dark grayish brown (10YR 4/2) iron depletions with clear boundaries in matrix and 30 percent fine faint irregular dark brown (10YR 3/3) masses of oxidized iron with clear boundaries in matrix; 5 percent pumice paragavel; strongly acid (pH 5.4); clear wavy boundary.
- Bg4—65 to 150 centimeters; brown (10YR 4/3) medial sandy loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine and fine irregular pores; 10 percent fine faint irregular very dark grayish brown (10YR 3/2) iron depletions with clear boundaries in matrix and 30 percent fine distinct irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; 5 percent gravel; strongly acid (pH 5.4).

## **Wonderland Series**

### ***Setting***

*Landscape:* Cascade Mountains

*Landform:* Valley floors, valley walls, lahars, moraines, debris cones, outwash terraces, talus slopes

*Slope range:* 5 to 50 percent

*Elevation:* 975 to 2420 meters

*Mean annual precipitation:* 1500 to 3935 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 60 days

### ***Soil Characteristics***

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high

*Parent material:* Till and lahar deposits

*Taxonomic class:* Ashy-skeletal, glassy, nonacid Typic Cryaquands

### ***Typical Pedon***

Wonderland very gravelly ashy fine sandy loam ([fig. 47](#)) in an area of Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes; near the headwaters of Tahoma Creek and the toe of Tahoma Glacier, below Glacier Island; Mount Rainier National Park, Pierce County, Washington; 685 meters north and 185 meters west of the southeast corner of section 6, T. 15 N., R. 8 E.; Mount Rainier West, Washington,

Soil Survey of Mount Rainier National Park, Washington

U.S. Geological Survey Quadrangle; latitude 46.813982 degrees north and longitude 121.845201 degrees west (latitude 46 degrees, 48 minutes, 50 seconds north and longitude 121 degrees, 50 minutes, 43 seconds west), WGS 84; UTM 588 098 meters E, 5 185 140 meters N, zone 10N, NAD 83 (Colors are for moist soil unless otherwise noted.)

Oi—0 to 2 centimeters; slightly decomposed plant material; very strongly acid (pH 4.5); clear wavy boundary.

Oe—2 to 5 centimeters; moderately decomposed plant material; common very fine and fine and few medium and coarse roots; very strongly acid (pH 4.5); abrupt wavy boundary.

A—5 to 15 centimeters; very dark brown (10YR 2/2) very gravelly ashy fine sandy loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and medium and few coarse roots; common very fine and fine interstitial pores; 10 percent fine andesite



Figure 47.—Typical profile of a Wonderland soil. Numerals on tape indicate centimeters.

gravel, 20 percent medium and coarse andesite gravel, and 20 percent andesite cobbles; moderately acid (pH 5.7); clear wavy boundary.

Bw—15 to 35 centimeters; dark brown (10YR 3/3) very gravelly ashy sandy loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and few fine and medium roots; common very fine and fine interstitial pores; 10 percent fine andesite gravel, 25 percent medium and coarse andesite gravel, 15 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.7); clear wavy boundary.

Bg1—35 to 60 centimeters; brown (10YR 4/3) very gravelly ashy sandy loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 2 percent dark reddish brown (5YR 3/4) masses of oxidized iron in matrix and 2 percent dark gray (10YR 4/1) iron depletions with diffuse boundaries along root channels; 10 percent fine andesite gravel, 25 percent medium and coarse andesite gravel, 15 percent andesite cobbles, and 5 percent andesite stones; moderately acid (pH 5.7); clear wavy boundary.

Bg2—60 to 100 centimeters; brown (10YR 4/3) very gravelly ashy fine sandy loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 2 percent dark reddish brown (5YR 3/4) masses of oxidized iron in matrix and 2 percent dark gray (10YR 4/1) iron depletions with diffuse boundaries along root channels; 15 percent fine andesite gravel, 20 percent medium and coarse andesite gravel, and 20 percent andesite cobbles; moderately acid (pH 5.8); clear wavy boundary.

Bg3—100 to 150 centimeters; brown (10YR 4/3) extremely gravelly ashy fine sandy loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 2 percent dark reddish brown (5YR 3/4) masses of oxidized iron in matrix and 2 percent dark gray (10YR 4/1) iron depletions with diffuse boundaries along root channels; 15 percent fine andesite gravel, 25 percent medium and coarse andesite gravel, and 20 percent andesite cobbles; moderately acid (pH 5.8).

# General Soil Map Units

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The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, drainage, and vegetative cover ([figs. 48 and 49](#)). Each map unit on the general soil map is a unique natural landscape. Typically, each unit consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

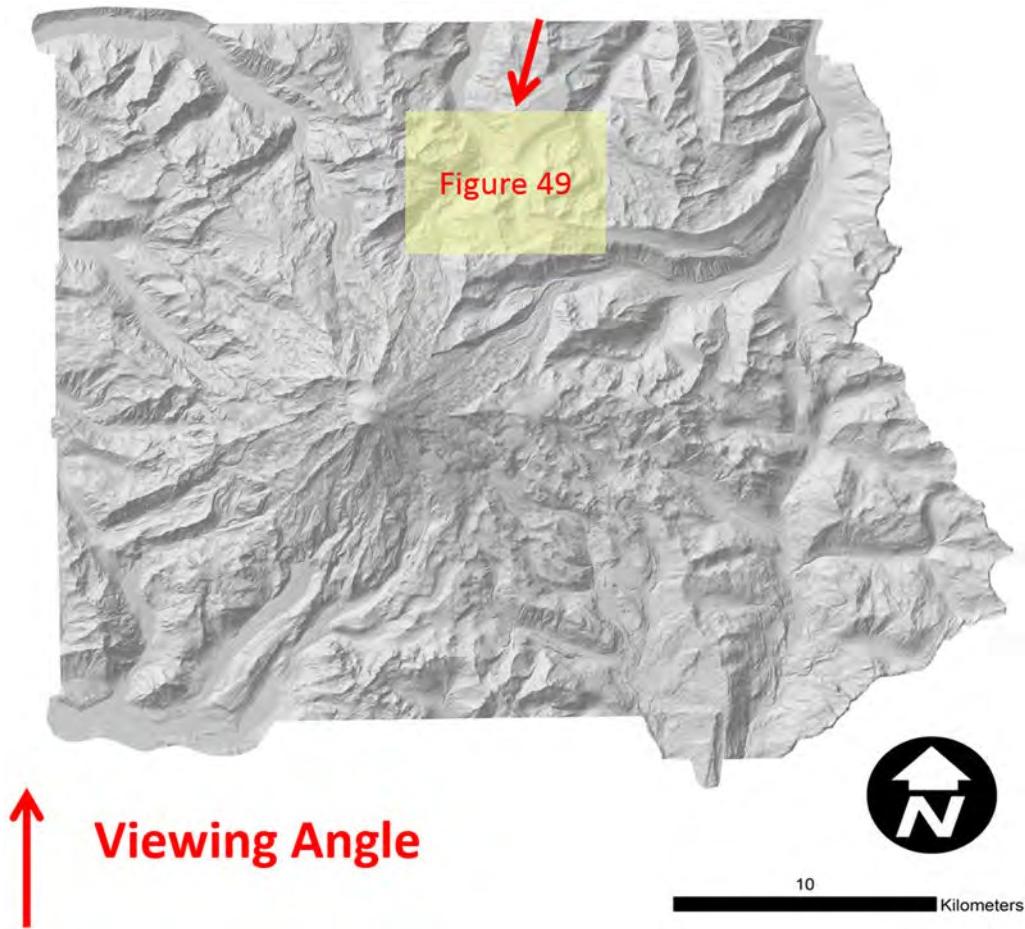


Figure 48.—Index for general soil map unit block diagram for Mount Rainier National Park. (See [figure 49](#).)

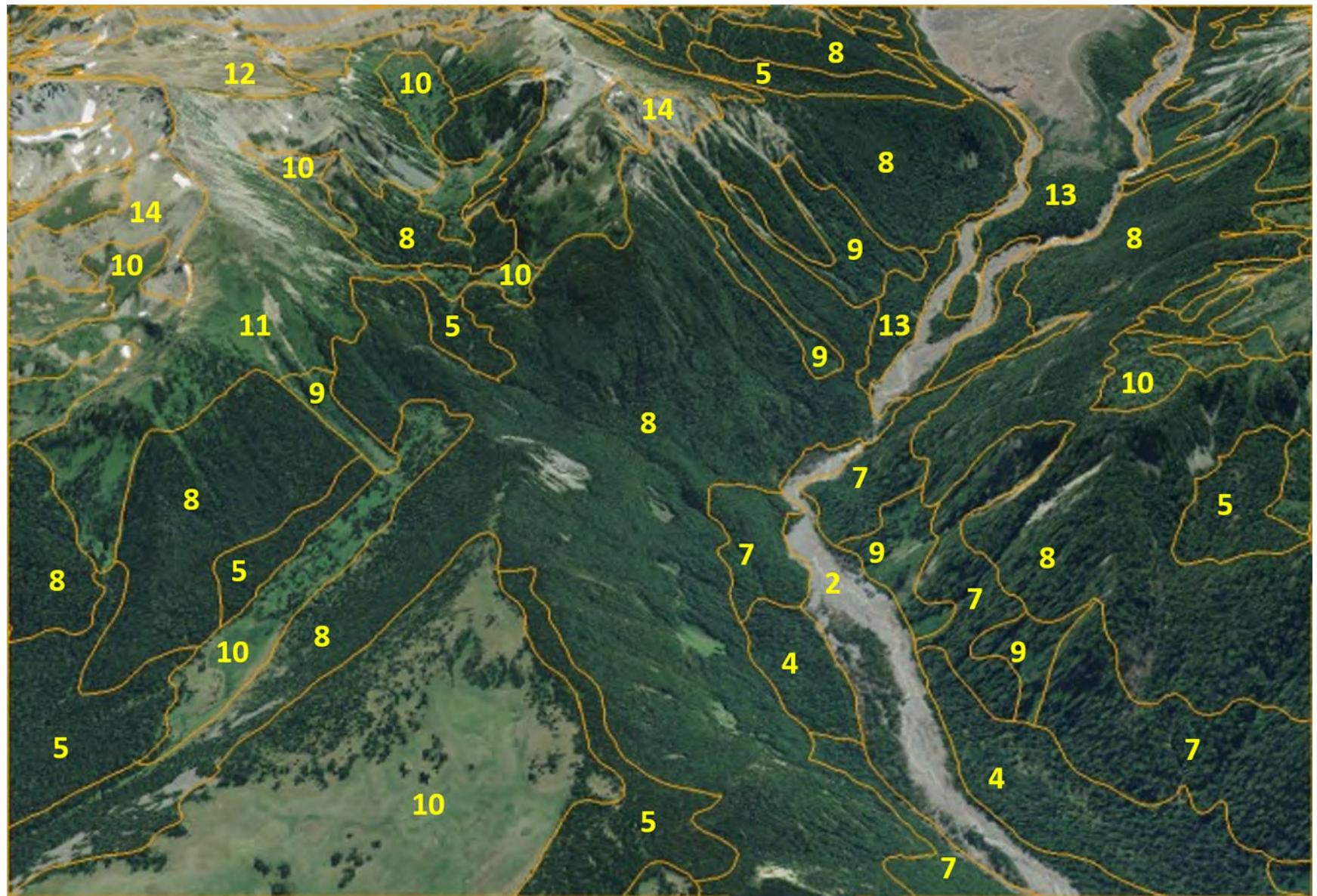


Figure 49.—General soil map unit delineations and numbers draped over 2009 National Agriculture Image Program photograph, generated in ESRI® ArcScene™ 10, looking south from Grand Park up the valley of the West Fork of the White River. Delineations establish broad landscape segments based on soil climate, vegetation, and geomorphology. Map units 2, 4, and 7 represent soils under coniferous forests in the low elevation phase of the cryic soil temperature regime. Map units 5 and 8 represent soils under coniferous forests in the high elevation phase of the cryic soil temperature regime. Map unit 9 represents soils that formed under deciduous forests, and map units 10 and 11 represent those that formed under subalpine meadows. Map units 12 and 13 represent recently deglaciated terrain, and map unit 14 represents areas that are dominantly miscellaneous land types.

The general soil map can be used to compare the suitability of large areas for general land uses and general interpretive and scientific value. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for detailed planning or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management, interpretive ratings, soil properties, and ecological classification.

The general soil map unit delineations for Mount Rainier National Park were created by aggregating detailed soil map unit delineations. Aggregations were based primarily on landscape, soil climate zones, and vegetative cover. In general, lower lying landform positions influenced by river processes (flood plains and terraces) were mapped separately from areas that are dominantly landforms such as debris cones and debris aprons. These lower lying landform positions were also aggregated separately from the higher lying positions, such as valley walls, cirques, bedrock benches, and ridges. Soil climate zones within the park follow a strong elevation gradient. The warmest soils (frigid soil temperature regime) are at the lowest elevations, and the coldest soils (high cryic and gelic soil temperature regimes) are at the highest elevations.

The general soil map units are described in this section first by a broad group and then by individual map units in each group. The soil series names used to identify the general soil map units reference the most abundant soil types in the unit. A named soil makes up at least 15 percent of the total general soil map unit delineation, based on the detailed soil map delineations and the respective percentages of the components.

## **Soils of Flood Plains and Terraces**

*Number of map units: 2*

*Percentage of survey area: About 4 percent*

### **1. Riverwash-Comet-Carbon (Frigid Alluvial Soils)**

*Gently sloping to moderately sloping flood plains, terraces, and depressions at low elevations in the northwest and southwest corners of the survey area*

*Percentage of survey area: Less than 0.5 percent*

*Elevation: 530 to 655 meters*

*Parent material: Alluvium*

*Dominant overstory: Western hemlock, Douglas-fir, black cottonwood, red alder, western redcedar, grand fir*

*Minor component: Sunbeam soils*

*Detailed soil map units aggregated in delineations: 6100, 6101*

#### **Comet soils**

*Depth class: Very deep*

*Drainage class: Somewhat excessively drained*

*Saturated hydraulic conductivity (Ksat): High or very high*

*Texture of surface layer: Very gravelly ashy sandy loam*

*Slope range: 0 to 20 percent*

#### **Carbon soils**

*Depth class: Very deep*

*Drainage class: Moderately well drained*

*Saturated hydraulic conductivity (Ksat): High or very high*

*Texture of surface layer:* Very gravelly ashy sandy loam  
*Slope range:* 0 to 20 percent

## 2. Flett-Riverwash-Narada (Cryic Alluvial Soils)

*Gently sloping to moderately sloping flood plains, terraces, and depressions at low to middle elevations throughout the survey area*

*Percentage of survey area:* About 4 percent

*Elevation:* 630 to 1865 meters

*Parent material:* Alluvium

*Dominant overstory:* Pacific silver fir, noble fir, Douglas-fir, black cottonwood, Sitka alder, western redcedar, Engelmann spruce

*Minor component:* Frogheaven soils

*Detailed soil map units aggregated in delineations:* 8100, 8101, 8200

### Flett soils

*Depth class:* Very deep

*Drainage class:* Somewhat excessively drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Very stony ashy coarse sandy loam

*Slope range:* 0 to 35 percent

### Narada soils

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy very fine sandy loam

*Slope range:* 0 to 25 percent

## Soils of Coniferous Mountain Valleys

*Number of map units:* 3

*Percentage of survey area:* About 11 percent

## 3. Tokaloo-Kautz-Sunbeam (Frigid soils)

*Gently sloping to moderately sloping debris aprons, debris cones, and terraces at low elevations in the northwest, southwest, and southeast corners of the survey area*

*Percentage of survey area:* Less than 0.5 percent

*Elevation:* 500 to 870 meters

*Parent material:* Volcanic ash over colluvium

*Dominant overstory:* Western hemlock, Douglas-fir, western redcedar

*Minor components:* Goldenlakes and Ingraham soils

*Detailed soil map units aggregated in delineations:* 6110, 6120, 6125

### Tokaloo soils

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Paragravelly ashy sandy loam

*Slope range:* 0 to 35 percent

#### **Kautz soils**

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy sandy loam

*Slope range:* 0 to 65 percent

#### **Sunbeam soils**

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Mucky ashy sandy loam

*Slope range:* 0 to 10 percent

## **4. Laughingwater-Longmire-Vantrump (Low Cryic Soils)**

*Gently sloping to moderately sloping debris aprons, debris cones, and terraces at middle elevations throughout the survey area*

*Percentage of survey area:* About 5 percent

*Elevation:* 610 to 1455 meters

*Parent material:* Volcanic ash over colluvium

*Dominant overstory:* Pacific silver fir, noble fir, Douglas-fir, western hemlock, western redcedar, Engelmann spruce

*Minor components:* Arahustan and Frogheaven soils; Ghost soils, warm; Ohanapecosh soils

*Detailed soil map units aggregated in delineations:* 8110, 8120, 8125, 8150

#### **Laughingwater soils**

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy sandy loam

*Slope range:* 0 to 65 percent

#### **Longmire soils**

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy sandy loam

*Slope range:* 0 to 65 percent

#### **Vantrump soils**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy sandy loam

*Slope range:* 0 to 65 percent

## 5. Mysticlake-Unicornpeak-Tipsoo (High Cryic Soils)

*Gently sloping to moderately sloping cirques, debris aprons, debris cones, and terraces at middle to high elevations throughout the survey area*

*Percentage of survey area:* About 5.5 percent

*Elevation:* 1050 to 1875 meters

*Parent material:* Volcanic ash, colluvium, glacial till

*Dominant overstory:* Mountain hemlock, subalpine fir, Pacific silver fir, Alaska cedar

*Minor components:* Ghost, Ipsut, Mountwow, Owyhigh, and Williwakas soils

*Detailed soil map units aggregated in delineations:* 8201, 8210, 8211, 8220, 8225

### Mysticlake soils

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Medial sandy loam

*Slope range:* 5 to 55 percent

### Unicornpeak soils

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Medial sandy loam

*Slope range:* 5 to 55 percent

### Tipsoo soils

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Paragravelly medial sandy loam

*Slope range:* 5 to 55 percent

## Soils of Coniferous Mountain Slopes

*Number of map units:* 3

*Percentage of survey area:* About 42 percent

## 6. Kautz-Goldenlakes-Tokaloo (Frigid Soils)

*Moderately sloping to steep debris aprons, valley walls, ridges, and bedrock benches at low elevations in the northwest, southwest, and southeast corners of the survey area*

*Percentage of survey area:* About 1.2 percent

*Elevation:* 490 to 1415 meters

*Parent material:* Volcanic ash over colluvium and bedrock

*Dominant overstory:* Western hemlock, Douglas-fir, western redcedar

*Minor components:* Ingraham and Sunbeam soils

*Detailed soil map units aggregated in delineations:* 7100, 7110, 7120, 7125

### Kautz soils

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy sandy loam

*Slope range:* 20 to 100 percent

#### **Goldenlakes soils**

*Depth class:* Moderately deep to bedrock

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Paragravelly ashy sandy loam

*Slope range:* 20 to 100 percent

#### **Tokaloo soils**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Paragravelly ashy sandy loam

*Slope range:* 5 to 50 percent

## **7. Longmire-Arahustan (Low Cryic Soils)**

*Moderately sloping or steep debris aprons, valley walls, ridges, and bedrock benches at middle elevations throughout the survey area*

*Percentage of survey area:* About 19 percent

*Elevation:* 550 to 1800 meters

*Parent material:* Volcanic ash, colluvium

*Dominant overstory:* Pacific silver fir, noble fir, Douglas-fir, western hemlock, western redcedar, Engelmann spruce

*Minor components:* Frogheaven, Laughingwater, Ohanapecosh, Summerland, and Vantrump soils

*Detailed soil map units aggregated in delineations:* 9100, 9101, 9110, 9120, 9125

#### **Longmire Soils**

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy sandy loam

*Slope range:* 15 to 100 percent

#### **Arahustan Soils**

*Depth class:* Moderately deep to bedrock

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Ashy loamy sand

*Slope range:* 15 to 100 percent

## **8. Owyhigh-Tipsoo (High Cryic Soils)**

*Moderately sloping or steep cirques, debris aprons, debris cones, and terraces at middle to high elevations throughout the survey area*

*Percentage of survey area:* About 22 percent

*Elevation:* 980 to 2170 meters

*Parent material:* Volcanic ash, colluvium, and glacial till

*Dominant overstory:* Mountain hemlock, subalpine fir, Pacific silver fir, Alaska cedar

*Minor components:* Ipsut, Mysticlake, and Sluiskin soils; Summerland soils, cold; Unicornpeak and Williwakas soils

*Detailed soil map units aggregated in delineations:* 9200, 9201, 9210, 9220, 9225

#### **Owyhigh soils**

*Depth class:* Moderately deep to bedrock

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Medial sandy loam

*Slope range:* 15 to 100 percent

#### **Tipsoo soils**

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Paragravelly medial sandy loam

*Slope range:* 15 to 100 percent

### ***Soils of Deciduous Mountain Slopes***

*Number of map units:* 1

*Percentage of survey area:* About 3.5 percent

## **9. Summerland (Cryic Soils)**

*Percentage of survey area:* About 3.5 percent

*Elevation:* 690 to 2110 meters

*Parent material:* Mixed volcanic ash and colluvium

*Dominant overstory:* Sitka alder, vine maple

*Minor components:* Frogheaven, Glacierisland, Longmire, Vantrump, Tipsoo, and Wonderland soils

*Detailed soil map units aggregated in delineations:* 8130, 8230

#### **Summerland soils**

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* Very high

*Texture of surface layer:* Extremely stony ashy sandy loam

*Slope range:* 15 to 100 percent

### ***Soils that Formed under Subalpine Meadows***

*Number of map units:* 2

*Percentage of survey area:* About 17 percent

## **10. Mountwow-Williwakas-Wahpenayo (High Cryic Soils)**

*Percentage of survey area:* About 3.5 percent

*Elevation:* 1110 to 2015 meters

*Parent material:* Volcanic ash, colluvium, glacial till

*Dominant overstory:* None

*Minor components:* Ghost, Owyhigh, and Unicornpeak soils

*Detailed soil map units aggregated in delineations:* 8250, 8251, 8252, 8255, 8256, 8257

#### **Mountwow soils**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Medial sandy loam

*Slope range:* 0 to 55 percent

#### **Williwakas soils**

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Medial sandy loam

*Slope range:* 0 to 10 percent

#### **Wahpenayo soils**

*Depth class:* Moderately deep to bedrock

*Drainage class:* Somewhat poorly drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Paragravelly medial sandy loam

*Slope range:* 5 to 45 percent

### **11. Burroughs-Chenuis-Sarvant (High Cryic Soils)**

*Percentage of survey area:* About 14 percent

*Elevation:* 1110 to 2265 meters

*Parent material:* Volcanic ash, colluvium

*Dominant overstory:* None

*Minor components:* Littlelahoma, Mountwow, Tatoosh, Unicornpeak, Wahpenayo, and Williwakas soils

*Detailed soil map units aggregated in delineations:* 9250, 9251, 9252, 9253, 9254, 9255, 9256, 9257, 9258, 9259

#### **Burroughs soils**

*Depth class:* Moderately deep to bedrock

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Medial fine sandy loam

*Slope range:* 10 to 100 percent

#### **Chenuis soils**

*Depth class:* Very deep

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Gravelly medial coarse sandy loam

*Slope range:* 10 to 100 percent

#### **Sarvant soils**

*Depth class:* Moderately deep to bedrock

*Drainage class:* Well drained

*Saturated hydraulic conductivity (Ksat):* High or very high

*Texture of surface layer:* Gravelly medial sandy loam  
*Slope range:* 10 to 100 percent

### **Soils of Recently Deglaciated Terrain**

*Number of map units:* 2  
*Percentage of survey area:* About 7 percent

## **12. Wahpenayo-Sarvant-Mountwow, Alpine Phases (Alpine Soils)**

*Percentage of survey area:* About 3 percent  
*Elevation:* 1400 to 2390 meters  
*Parent material:* Volcanic ash, colluvium, glacial till  
*Dominant overstory:* None  
*Minor components:* Burroughs and Chenuis soils; Tatoosh soils, alpine phases;  
Meany soils  
*Detailed soil map units aggregated in delineations:* 9260, 9261, 9262

#### **Wahpenayo soils, alpine**

*Depth class:* Moderately deep to bedrock  
*Drainage class:* Somewhat poorly drained  
*Saturated hydraulic conductivity (Ksat):* High or very high  
*Texture of surface layer:* Paragravelly medial sandy loam  
*Slope range:* 5 to 55 percent

#### **Sarvant soils, alpine**

*Depth class:* Moderately deep to bedrock  
*Drainage class:* Well drained  
*Saturated hydraulic conductivity (Ksat):* High or very high  
*Texture of surface layer:* Gravelly medial sandy loam  
*Slope range:* 15 to 100 percent

#### **Mountwow soils, alpine**

*Depth class:* Very deep  
*Drainage class:* Somewhat poorly drained  
*Saturated hydraulic conductivity (Ksat):* High or very high  
*Texture of surface layer:* Medial sandy loam  
*Slope range:* 5 to 50 percent

## **13. Glacierisland-Tamanos-Rubbleland, Till (Cryic Soils)**

*Percentage of survey area:* About 4 percent  
*Elevation:* 975 to 2420 meters  
*Parent material:* Glacial till and lahar; colluvium over massive ice  
*Dominant overstory:* Sitka alder, mountain hemlock, subalpine fir, Engelmann spruce  
*Minor components:* Sheepskull, Sluiskin, and Wonderland soils  
*Detailed soil map units aggregated in delineations:* 8203, 9263, 9994

#### **Glacierisland soils**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Saturated hydraulic conductivity (Ksat):* High or very high  
*Texture of surface layer:* Very gravelly ashy sandy loam  
*Slope range:* 10 to 100 percent

**Tamanos soils**

*Depth class:* Moderately deep to permafrost  
*Drainage class:* Well drained  
*Saturated hydraulic conductivity (Ksat):* Very high  
*Texture of surface layer:* Gravelly ashy loamy sand  
*Slope range:* 10 to 65 percent

**Areas that Are Dominantly Miscellaneous Land Types**

*Number of map units:* 2  
*Percentage of survey area:* About 16 percent

**14. Rubbleland, Talus-Rock Outcrop**

*Percentage of survey area:* About 4 percent  
*Elevation:* 1075 to 1865 meters  
*Dominant overstory:* None  
*Minor components:* Sluiskin and Summerland soils  
*Detailed soil map unit aggregated in delineations:* 9993

**Rubbleland, talus**

*Parent material:* Talus (cobbles, stones, and boulders)  
*Slope range:* 15 to 100 percent

**15. Glaciers-Rock Outcrop (Volcanic Cone)**

*Percentage of survey area:* About 12 percent  
*Elevation:* 1450 to 4392 meters  
*Parent material:* Glacial ice, bedrock  
*Dominant overstory:* None  
*Minor component:* Tatoosh soils, volcanic cone  
*Detailed soil map unit aggregated in delineations:* 9996



# Detailed Soil Map Units

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The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Minor soil components that have properties similar to those of the dominant soil or soils in the map unit do not affect use and management. They are called noncontrasting, or similar, components. They typically are not mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. The soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps could be considered phases of soil series

because of the natural variability of the properties of soils across landscapes. In some areas where the phases are extensive enough to be delineated separately, the phase names are included with the soil component name and in the map unit legend. The name of a soil phase commonly indicates a feature that affects use or management. For example, Littletahoma, moist, is a phase of the Littletahoma series.

The map units for Mount Rainier National Park are referred to as complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas of each complex. Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Each detailed soil map unit is assigned to a major land resource area (MLRA) (USDA Agriculture Handbook 296). Each unit in the survey area is in MLRA 3, Olympic and Cascade Mountains.

**Table 3** gives the acreage, hectarage, and proportionate extent of each map unit. **Table 4** cross-references the detailed soil map unit symbols used in this survey to the National soil map unit symbols. **Table 5** gives the percent composition and percent slope, including the low, representative (RV), and high values, for the major and minor components in each map unit in the area.

Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

## Descriptive Soil Map Unit Legend

The detailed soil map units for the survey area were initially drafted using a general scheme based on the soil climate regime, the vegetative cover, and the basic relative landform positions of low mountain slopes and high mountain slopes ([figs. 50, 51, 52, and 53](#)). Included below is an outline of this map unit scheme. For more information regarding the climate, vegetation, and landforms of individual soil components within each map unit, refer to the detailed soil map unit descriptions.

### Frigid/Udic Forested Low Mountain Slopes

- 6100—Riverwash-Comet complex, 0 to 15 percent slopes
- 6101—Comet-Carbon complex, 0 to 20 percent slopes
- 6110—Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes
- 6120—Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes
- 6125—Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes

### Frigid/Udic Forested High Mountain Slopes

- 7100—Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes
- 7110—Kautz-Goldenlakes complex, 35 to 100 percent slopes
- 7120—Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes
- 7125—Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes

### Low Cryic/Udic Forested Low Mountain Slopes

- 8100—Riverwash-Flett complex, 0 to 25 percent slopes
- 8101—Flett-Narada complex, 0 to 25 percent slopes
- 8110—Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes
- 8120—Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes
- 8125—Vantrump-Laughingwater-Longmire complex, 10 to 65 percent slopes
- 8130—Summerland-Longmire complex, 15 to 100 percent slopes

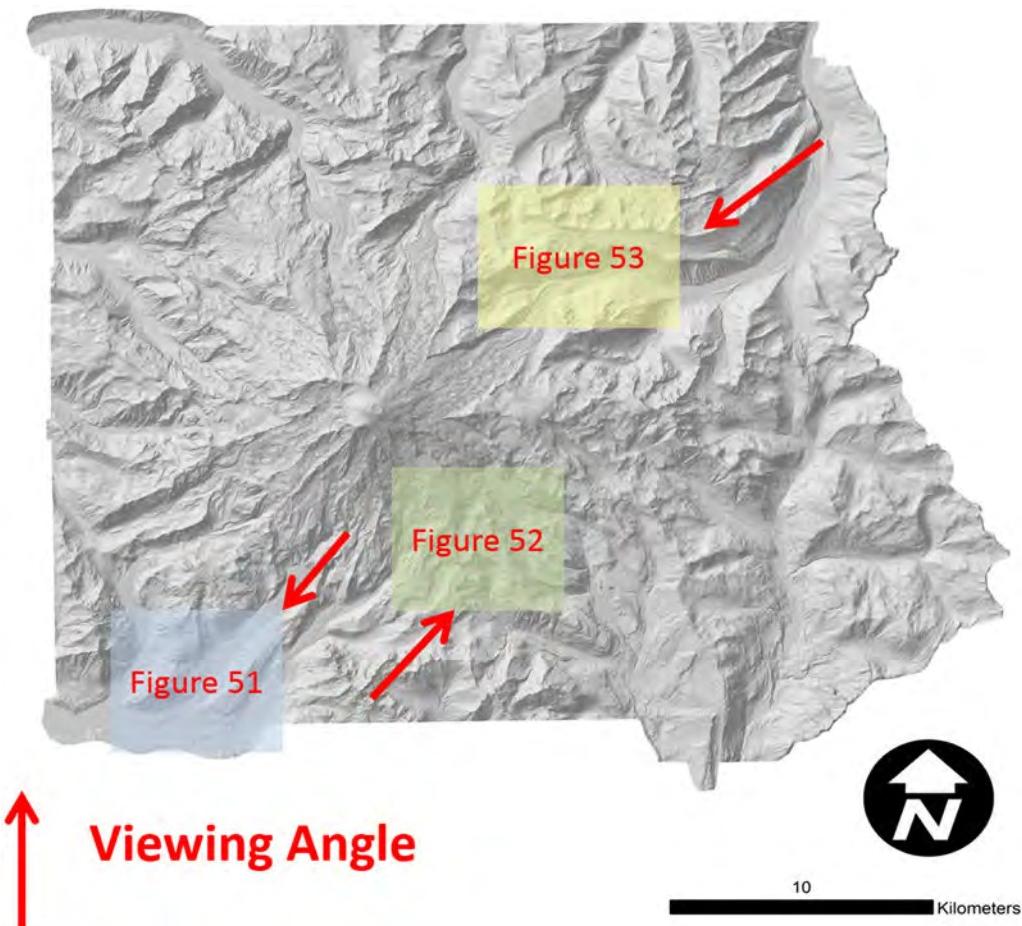


Figure 50.—Index to detailed soil map unit block diagrams for Mount Rainier National Park. (See figures 51, 52, and 53.).

#### Low Cryic/Udic Forested High Mountain Slopes

- 9100—Arahustan-Ohanapecosh-Longmire complex, 15 to 100 percent slopes
- 9101—Ohanapecosh-Arahustan-Summerland complex, 20 to 100 percent slopes
- 9110—Longmire-Arahustan complex, 35 to 100 percent slopes
- 9120—Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes
- 9125—Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes

#### Low Cryic/Udic Nonforested Low Mountain Slopes

- 8150—Ghost-Frogheaven complex, 0 to 10 percent slopes

#### High Cryic/Udic Forested Low Mountain Slopes

- 8200—Riverwash-Flett, cold complex, 5 to 50 percent slopes
- 8201—Mysticlake-Unicornpeak-Williwakas complex, 0 to 40 percent slopes
- 8203—Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes
- 8210—Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes
- 8211—Owyhigh-Mysticlake-Williwakas complex, 0 to 50 percent slopes
- 8220—Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes
- 8225—Mysticlake-Unicornpeak-Tipsoo complex, 10 to 55 percent slopes
- 8230—Summerland-Tipsoo complex, 15 to 100 percent slopes

**High Cryic/Udic Forested High Mountain Slopes**

- 9200—Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes
- 9201—Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes
- 9210—Tipsoo-Owyhigh complex, 35 to 100 percent slopes
- 9220—Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes
- 9225—Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes

**High Cryic/Udic Nonforested Low Mountain Slopes**

- 8250—Ghost-Williwakas-Mountwow, moist complex, 0 to 20 percent slopes
- 8251—Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes
- 8252—Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes
- 8255—Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes
- 8256—Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes
- 8257—Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes

**High Cryic/Udic Nonforested High Mountain Slopes**

- 9250—Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes
- 9251—Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes
- 9252—Littletahoma-Burroughs-Mountwow, moist complex, 20 to 100 percent slopes
- 9253—Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes
- 9254—Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes
- 9255—Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes
- 9256—Chenuis-Sarvant complex, 25 to 100 percent slopes
- 9257—Littletahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes
- 9258—Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes
- 9259—Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes

**Alpine Cryic/Udic Mountain Slopes**

- 9260—Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes
- 9261—Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes
- 9262—Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes

**Alpine Gelic/Udic Mountain Slopes**

- 9263—Tamanos-Glaciers complex, 10 to 65 percent slopes

**Map Units that Are Dominantly Miscellaneous Land Types**

- 9993—Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes
- 9994—Rubbleland, till-Glacierisland-Wonderland complex, 15 to 100 percent slopes
- 9996—Glaciers-Rock outcrop complex, 15 to 100 percent slopes

W—Water

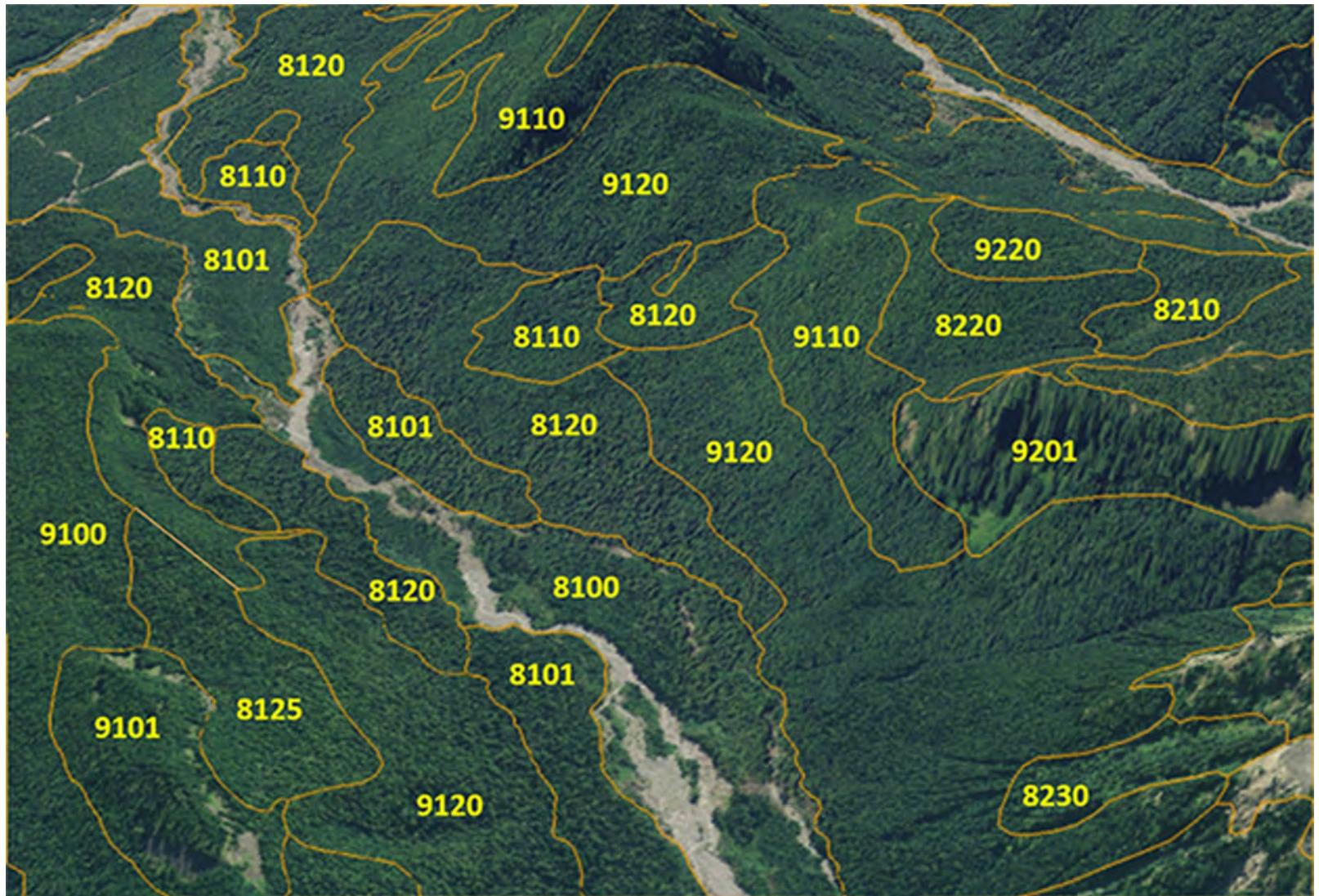


Figure 51.—Detailed soil map unit delineations and numbers draped over 2009 National Agriculture Image Program photograph, generated in ESRI® ArcScene™ 10, looking southwest from Ragged Ridge down the Kautz Creek valley. The low cryic map units (8100's and 9100's) transition into the high cryic units (8200's and 9200's) in this area. Along the Kautz Creek drainageway, less sloping areas (map units 8100, 8101, 8110, 8120, and 8125) transition to steeper, upland positions (map units 9100, 9101, 9110, and 9120).

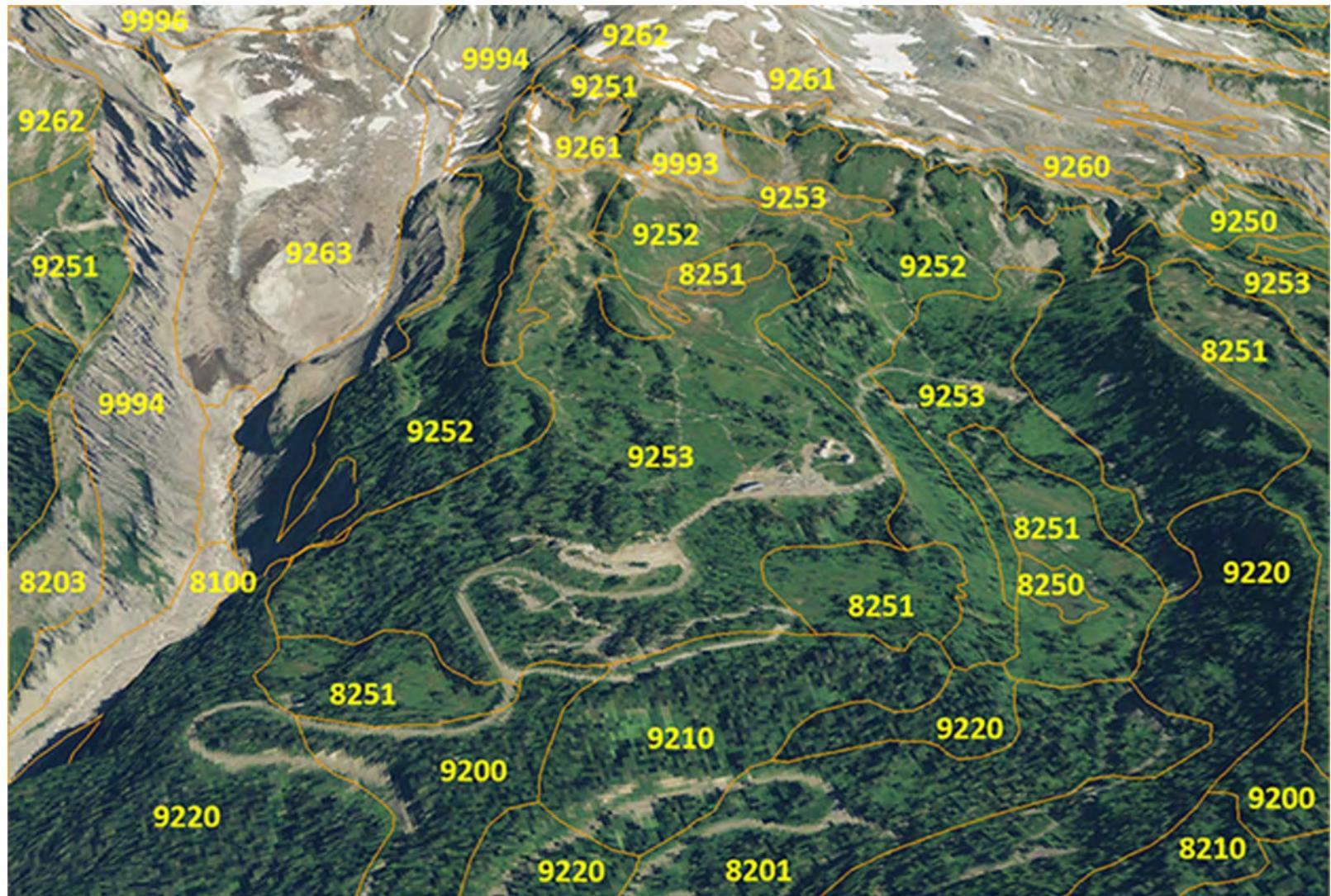


Figure 52.—Detailed soil map unit delineations and numbers draped over 2009 National Agriculture Image Program photograph, generated in ESRI® ArcScene™ 10, looking northeast from Paradise to Golden Gate and Panorama Point. As elevation increases, forested areas (map units 8201, 8203, 9210, and 9220) transition into subalpine meadow areas (map units in 8250's and 9250's). At the higher elevations are alpine areas (map units 9261 and 9262) that transition into areas that have been recently deglaciated (map units 8203 and 9263) or are dominantly miscellaneous land types (map units 9994 and 9996).

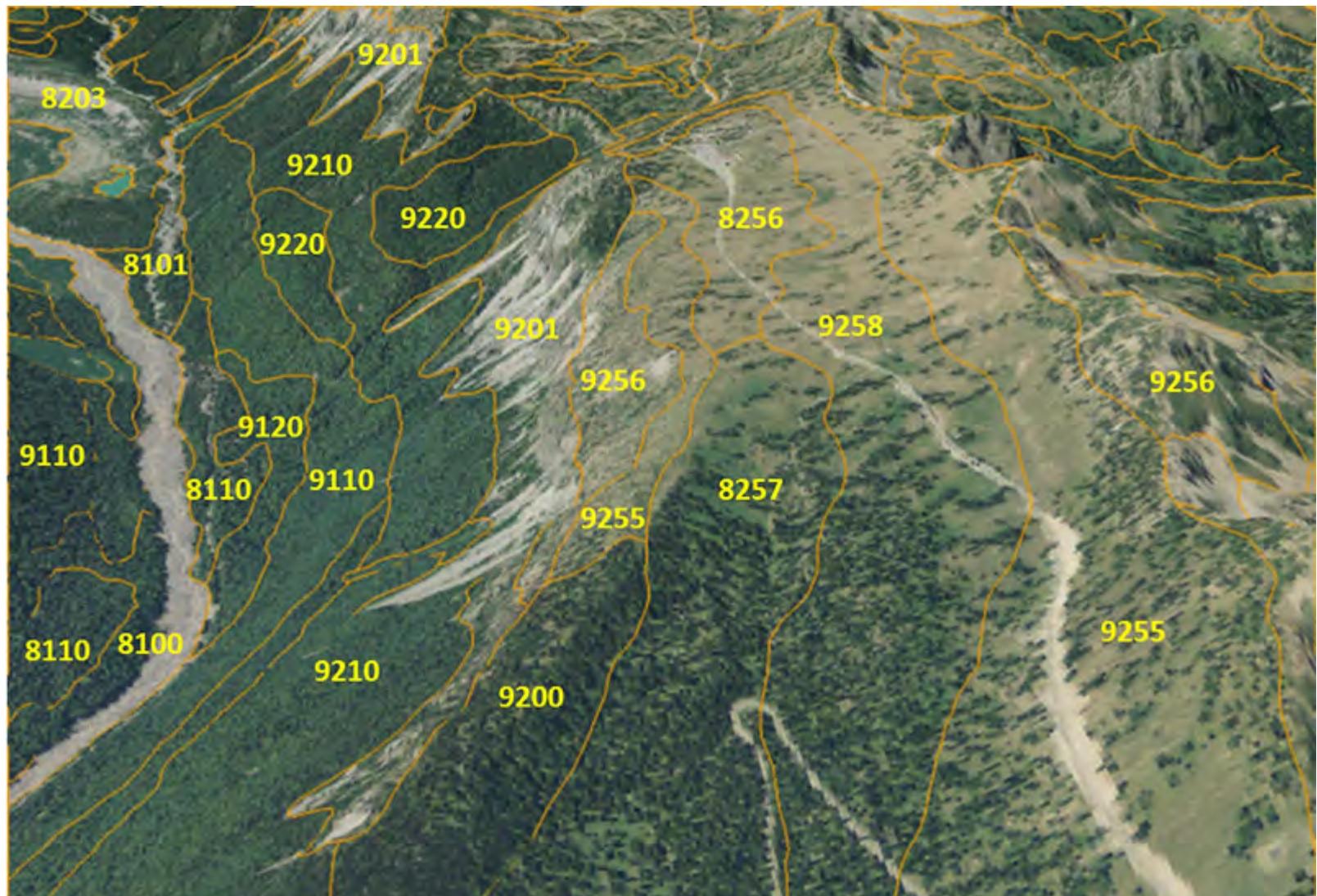


Figure 53.—Detailed soil map unit delineations and numbers draped over 2009 National Agriculture Image Program photograph, generated in ESRI® ArcScene™ 10, looking west to Sunrise and up the head of the White River valley. A single hillslope exhibits a wide variety of climates in this area. Areas of low cryic soils are along the White River drainageway (map units 8100, 8101, 8110, 9110, and 9120). Moving up the valley wall, areas of high cryic soils are in the steeper landform positions (map units 9200, 9201, 9210, and 9220). At the higher elevations, the vegetative cover transitions from forests to meadows (map units 8256, 8257, 9255, 9256, and 9258).

## Detailed Soil Map Unit Descriptions

### 6100—Riverwash-Comet complex, 0 to 15 percent slopes

#### *Map Unit Setting*

*Elevation:* 530 to 660 meters

*Mean annual precipitation:* 1955 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

#### *Map Unit Composition*

Riverwash: 80 percent

Comet and similar soils: 15 percent

Dissimilar minor component: 5 percent

#### *Riverwash*

##### **Setting**

*Landform:* Flood plains

##### **Properties and qualities**

*Slope:* 0 to 15 percent

*Surface area covered by cobbles:* 0 to 30 percent

*Parent material:* Alluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* Unspecified (see Physical Properties table)

*Flooding frequency:* Frequent (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 60 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Unspecified

*Land capability subclass (nonirrigated):* 8

##### **Vegetation**

*Common trees:* None

##### **Typical profile**

C—0 to 150 centimeters; stratified gravel to sand

#### *Comet*

##### **Setting**

*Landform:* Flood plains, terraces

*Landform position (three-dimensional):* Treads

*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 0 to 15 percent

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* Rare (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 7.3 centimeters)

*Land capability subclass (nonirrigated):* 4s

#### **Vegetation**

*Ecological site ID:* F003XN940WA

*Ecological site scientific name:* *Populus balsamifera ssp. trichocarpa-Tsuga*

*heterophylla/Mahonia nervosa/Goodyera oblongifolia* (black cottonwood-western hemlock/Cascade Oregon grape/rattlesnake plantain)

*Ecological site common name:* Southern Washington Cascades Frigid Riparian Forest

*Common trees:* Bigleaf maple, black cottonwood, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

A1—4 to 28 centimeters; very gravelly ashy sandy loam

A2—28 to 46 centimeters; very gravelly ashy loamy sand

A3—46 to 71 centimeters; gravelly ashy loamy sand

A4—71 to 93 centimeters; very gravelly ashy loamy sand

A5—93 to 105 centimeters; very gravelly ashy fine sandy loam

C—105 to 150 centimeters; extremely cobbly ashy fine sandy loam

#### **Dissimilar Minor Component**

##### **Water**

*Composition:* 5 percent

*Landform:* Flood plains

## **6101—Comet-Carbon complex, 0 to 20 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade river valleys

*Elevation:* 530 to 660 meters

*Mean annual precipitation:* 1955 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

#### **Map Unit Composition**

*Comet and similar soils:* 50 percent

*Carbon and similar soils:* 35 percent

*Dissimilar minor components:* 15 percent

#### **Comet**

##### **Setting**

*Landform:* Flood plains, terraces

*Landform position (three-dimensional):* Treads

*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 0 to 20 percent

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* Rare (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 7.3 centimeters)

*Land capability subclass (nonirrigated):* 4e

### **Vegetation**

*Ecological site ID:* F003XN940WA

*Ecological site scientific name:* *Populus balsamifera* ssp. *trichocarpa*-*Tsuga heterophylla*/*Mahonia nervosa*/*Goodyera oblongifolia* (black cottonwood-western hemlock/Cascade Oregon grape/rattlesnake plantain)

*Ecological site common name:* Southern Washington Cascades Frigid Riparian Forest

*Common trees:* Bigleaf maple, black cottonwood, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

A1—4 to 28 centimeters; very gravelly ashy sandy loam

A2—28 to 46 centimeters; very gravelly ashy loamy sand

A3—46 to 71 centimeters; gravelly ashy loamy sand

A4—71 to 93 centimeters; very gravelly ashy loamy sand

A5—93 to 105 centimeters; very gravelly ashy fine sandy loam

C—105 to 150 centimeters; extremely cobbly ashy fine sandy loam

### **Carbon**

#### **Setting**

*Landform:* Flood plains, terraces

*Landform position (three-dimensional):* Treads

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 20 percent

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* Rare (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 50 to 60 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 15.4 centimeters)

*Land capability subclass (nonirrigated):* 4e

### **Vegetation**

*Ecological site ID:* F003XN940WA

*Ecological site scientific name:* *Populus balsamifera* ssp. *trichocarpa*-*Tsuga heterophylla*/*Mahonia nervosa*/*Goodyera oblongifolia* (black cottonwood-western hemlock/Cascade Oregon grape/rattlesnake plantain)

*Ecological site common name:* Southern Washington Cascades Frigid Riparian Forest

*Common trees:* Bigleaf maple, black cottonwood, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 6 centimeters; moderately decomposed plant material  
A1—6 to 31 centimeters; very gravelly ashy sandy loam  
A2—31 to 61 centimeters; ashy fine sandy loam  
Bg1—61 to 93 centimeters; ashy fine sandy loam  
Bg2—93 to 150 centimeters; extremely gravelly ashy sandy loam

**Dissimilar Minor Components**

**Sunbeam soils**

*Composition:* 10 percent  
*Landform:* Depressions of flood plains and terraces

**Riverwash**

*Composition:* 5 percent  
*Landform:* Flood plains

**6110—Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes**

**Map Unit Setting**

*General landscape:* Cascade Mountains  
*Elevation:* 540 to 810 meters  
*Mean annual precipitation:* 1855 to 2055 millimeters  
*Mean annual air temperature:* 5 to 7 degrees C  
*Frost-free period:* 90 to 130 days

**Map Unit Composition**

*Tokaloo and similar soils:* 55 percent  
*Kautz and similar soils:* 25 percent  
*Sunbeam and similar soils:* 20 percent

**Tokaloo**

**Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 0 to 20 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 18.2 centimeters)  
*Land capability subclass (nonirrigated):* 6w

### **Vegetation**

*Ecological site ID:* F003XN942WA

*Ecological site scientific name:* *Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis* (western hemlock-western redcedar/devilsclub-salmonberry)

*Ecological site common name:* Southern Washington Cascades Moist Frigid Coniferous Forest

*Common trees:* Bigleaf maple, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

A—5 to 10 centimeters; paragravelly ashy sandy loam

Bw—10 to 25 centimeters; paragravelly ashy coarse sandy loam

Bg1—25 to 74 centimeters; paragravelly ashy loamy coarse sand

2Bg2—74 to 90 centimeters; very gravelly ashy sandy loam

2Bg3—90 to 150 centimeters; very cobbly ashy sandy loam

## **Kautz**

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 20 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 17.5 centimeters)

*Land capability subclass (nonirrigated):* 4e

### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 15 centimeters; ashy sandy loam

Bs1—15 to 26 centimeters; ashy sandy loam

Bs2—26 to 76 centimeters; paragravelly ashy loamy sand

2Bw1—76 to 120 centimeters; gravelly ashy sandy loam

2Bw2—120 to 150 centimeters; very gravelly ashy sandy loam

### **Sunbeam**

#### **Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 10 percent  
*Parent material:* Volcanic ash  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* Frequent (see Water Features table)  
*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* High (about 26.3 centimeters)  
*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* F003XN941WA  
*Ecological site scientific name:* *Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregano* (western redcedar-red alder/American skunkcabbage-Oregon oxalis)  
*Ecological site common name:* Southern Washington Cascades Wet Frigid Coniferous Forest  
*Common trees:* Bigleaf maple, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material  
A—3 to 15 centimeters; mucky ashy sandy loam  
Bg1—15 to 32 centimeters; paragravelly ashy sandy loam  
Bg2—32 to 52 centimeters; paragravelly ashy sandy loam  
Bg3—52 to 80 centimeters; ashy sandy loam  
Bg4—80 to 150 centimeters; ashy fine sandy loam

## **6120—Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains  
*Elevation:* 540 to 870 meters  
*Mean annual precipitation:* 1855 to 2110 millimeters  
*Mean annual air temperature:* 5 to 7 degrees C  
*Frost-free period:* 90 to 130 days

### **Map Unit Composition**

*Kautz and similar soils:* 45 percent  
*Tokaloo and similar soils:* 35 percent

*Sunbeam and similar soils:* 15 percent

*Dissimilar minor component:* 5 percent

### **Kautz**

#### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 35 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 17.5 centimeters)

*Land capability subclass (nonirrigated):* 6e

#### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregongrape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 15 centimeters; ashy sandy loam

Bs1—15 to 26 centimeters; ashy sandy loam

Bs2—26 to 76 centimeters; paragradeally ashy loamy sand

2Bw1—76 to 120 centimeters; gravelly ashy sandy loam

2Bw2—120 to 150 centimeters; very gravelly ashy sandy loam

### **Tokaloo**

#### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 35 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 18.2 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN942WA

*Ecological site scientific name:* *Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis* (western hemlock-western redcedar/devilsclub-salmonberry)

*Ecological site common name:* Southern Washington Cascades Moist Frigid Coniferous Forest

*Common trees:* Bigleaf maple, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

A—5 to 10 centimeters; paragravelly ashy sandy loam

Bw—10 to 25 centimeters; paragravelly ashy coarse sandy loam

Bg1—25 to 74 centimeters; paragravelly ashy loamy coarse sand

2Bg2—74 to 90 centimeters; very gravelly ashy sandy loam

2Bg3—90 to 150 centimeters; very cobbly ashy sandy loam

### **Sunbeam**

#### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.3 centimeters)

*Land capability subclass (nonirrigated):* 6w

### **Vegetation**

*Ecological site ID:* F003XN941WA

*Ecological site scientific name:* *Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregano* (western redcedar-red alder/American skunkcabbage-Oregon oxalis)

*Ecological site common name:* Southern Washington Cascades Wet Frigid Coniferous Forest

*Common trees:* Bigleaf maple, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

**Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material  
A—3 to 15 centimeters; mucky ashy sandy loam  
Bg1—15 to 32 centimeters; paragravelly ashy sandy loam  
Bg2—32 to 52 centimeters; paragravelly ashy sandy loam  
Bg3—52 to 80 centimeters; ashy sandy loam  
Bg4—80 to 150 centimeters; ashy fine sandy loam

**Dissimilar Minor Component**

**Goldenlakes soils**

*Composition:* 5 percent  
*Landform:* Debris aprons on mountain slopes

**6125—Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes**

**Map Unit Setting**

*General landscape:* Cascade Mountains  
*Elevation:* 500 to 690 meters  
*Mean annual precipitation:* 1855 to 2055 millimeters  
*Mean annual air temperature:* 5 to 7 degrees C  
*Frost-free period:* 90 to 130 days

**Map Unit Composition**

*Tokaloo and similar soils:* 35 percent  
*Kautz and similar soils:* 30 percent  
*Goldenlakes and similar soils:* 20 percent  
*Dissimilar minor components:* 15 percent

**Tokaloo**

**Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 0 to 35 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 18.2 centimeters)  
*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN942WA

*Ecological site scientific name:* *Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis* (western hemlock-western redcedar/devilsclub-salmonberry)

*Ecological site common name:* Southern Washington Cascades Moist Frigid Coniferous Forest

*Common trees:* Bigleaf maple, Douglas-fir, grand fir, red alder, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

A—5 to 10 centimeters; paragravelly ashy sandy loam

Bw—10 to 25 centimeters; paragravelly ashy coarse sandy loam

Bg1—25 to 74 centimeters; paragravelly ashy loamy coarse sand

2Bg2—74 to 90 centimeters; very gravelly ashy sandy loam

2Bg3—90 to 150 centimeters; very cobbly ashy sandy loam

## **Kautz**

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 17.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 15 centimeters; ashy sandy loam  
Bs1—15 to 26 centimeters; ashy sandy loam  
Bs2—26 to 76 centimeters; paragravelly ashy loamy sand  
2Bw1—76 to 120 centimeters; gravelly ashy sandy loam  
2Bw2—120 to 150 centimeters; very gravelly ashy sandy loam

### ***Goldenlakes***

#### **Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 65 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Low (about 9.8 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN943WA  
*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)  
*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest  
*Common trees:* Douglas-fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 5 centimeters; moderately decomposed plant material  
E—5 to 20 centimeters; paragravelly ashy sandy loam  
Bs—20 to 63 centimeters; paragravelly ashy loamy sand  
2Bw—63 to 88 centimeters; very stony ashy sandy loam  
2R—88 to 150 centimeters; bedrock

### ***Dissimilar Minor Components***

#### **Sunbeam soils**

*Composition:* 10 percent  
*Landform:* Debris aprons on mountain slopes

#### **Ingraham soils**

*Composition:* 5 percent  
*Landform:* Debris aprons on mountain slopes

## **7100—Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 660 to 1240 meters

*Mean annual precipitation:* 1855 to 2005 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### **Map Unit Composition**

*Goldenlakes and similar soils:* 50 percent

*Ingraham and similar soils:* 30 percent

*Kautz and similar soils:* 15 percent

*Dissimilar minor component:* 5 percent

### **Goldenlakes**

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 35 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/*

*Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade  
Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous  
Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 20 centimeters; paragravelly ashy sandy loam

Bs—20 to 63 centimeters; paragleyashy loamy sand  
2Bw—63 to 88 centimeters; very stony ashy sandy loam  
2R—88 to 150 centimeters; bedrock

### ***Ingraham***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 35 to 100 percent

*Parent material:* Volcanic ash over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 3.2 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

E—4 to 7 centimeters; paragleyashy loamy sand

Bs—7 to 25 centimeters; paragleyashy loamy coarse sand

2R—25 to 150 centimeters; bedrock

### ***Kautz***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 35 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile): Moderate (about 17.5 centimeters)*

*Land capability subclass (nonirrigated): 7e*

**Vegetation**

*Ecological site ID: F003XN943WA*

*Ecological site scientific name: *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregongrape)*

*Ecological site common name: Southern Washington Cascades Frigid Coniferous Forest*

*Common trees: Douglas-fir, western hemlock, western redcedar*

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 15 centimeters; ashy sandy loam

Bs1—15 to 26 centimeters; ashy sandy loam

Bs2—26 to 76 centimeters; paragradeally ashy loamy sand

2Bw1—76 to 120 centimeters; gravelly ashy sandy loam

2Bw2—120 to 150 centimeters; very gravelly ashy sandy loam

***Dissimilar Minor Component***

**Rock outcrop**

*Composition: 5 percent*

## **7110—Kautz-Goldenlakes complex, 35 to 100 percent slopes**

***Map Unit Setting***

*General landscape: Cascade Mountains*

*Elevation: 500 to 1420 meters*

*Mean annual precipitation: 1805 to 2110 millimeters*

*Mean annual air temperature: 5 to 7 degrees C*

*Frost-free period: 90 to 130 days*

***Map Unit Composition***

*Kautz and similar soils: 40 percent*

*Goldenlakes and similar soils: 35 percent*

*Dissimilar minor components: 25 percent*

### ***Kautz***

**Setting**

*Landform: Glacial-valley walls*

*Landform position (three-dimensional): Mountainflanks*

*Aspect (range): All aspects*

**Properties and qualities**

*Slope: 35 to 100 percent*

*Parent material: Volcanic ash over colluvium derived from andesite*

*Depth to restrictive feature: None within a depth of 150 centimeters*

*Drainage class: Well drained*

*Capacity to transmit water (Ksat): High or very high (see Physical Properties table)*

*Flooding frequency: None*

*Ponding frequency: None*

*Seasonal high water table (minimum depth): More than 200 centimeters*

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 17.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 15 centimeters; ashy sandy loam

Bs1—15 to 26 centimeters; ashy sandy loam

Bs2—26 to 76 centimeters; paragradeally ashy loamy sand

2Bw1—76 to 120 centimeters; gravelly ashy sandy loam

2Bw2—120 to 150 centimeters; very gravelly ashy sandy loam

## **Goldenlakes**

### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 35 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 20 centimeters; paragradeally ashy sandy loam

Bs—20 to 63 centimeters; paragradeally ashy loamy sand

2Bw—63 to 88 centimeters; very stony ashy sandy loam

2R—88 to 150 centimeters; bedrock

### **Dissimilar Minor Components**

#### **Tokaloo soils**

*Composition:* 10 percent

*Landform:* Swales of glacial-valley walls

#### **Ingraham soils**

*Composition:* 5 percent

*Landform:* Glacial-valley walls

#### **Rock outcrop**

*Composition:* 5 percent

#### **Sunbeam soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

## **7120—Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 560 to 1160 meters

*Mean annual precipitation:* 1855 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### **Map Unit Composition**

*Kautz and similar soils:* 50 percent

*Tokaloo and similar soils:* 25 percent

*Goldenlakes and similar soils:* 15 percent

*Dissimilar minor components:* 10 percent

### **Kautz**

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 25 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile): Moderate (about 17.5 centimeters)*

*Land capability subclass (nonirrigated): 7e*

#### **Vegetation**

*Ecological site ID: F003XN943WA*

*Ecological site scientific name: *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregongrape)*

*Ecological site common name: Southern Washington Cascades Frigid Coniferous Forest*

*Common trees: Douglas-fir, western hemlock, western redcedar*

#### **Typical profile**

*Oi—0 to 2 centimeters; slightly decomposed plant material*

*Oe—2 to 8 centimeters; moderately decomposed plant material*

*E—8 to 15 centimeters; ashy sandy loam*

*Bs1—15 to 26 centimeters; ashy sandy loam*

*Bs2—26 to 76 centimeters; paragravelly ashy loamy sand*

*2Bw1—76 to 120 centimeters; gravelly ashy sandy loam*

*2Bw2—120 to 150 centimeters; very gravelly ashy sandy loam*

### ***Tokaloo***

#### **Setting**

*Landform: Swales of glacial-valley walls*

*Landform position (three-dimensional): Mountainflanks*

*Aspect (range): All aspects*

#### **Properties and qualities**

*Slope: 25 to 50 percent*

*Parent material: Volcanic ash over colluvium derived from andesite*

*Depth to restrictive feature: None within a depth of 150 centimeters*

*Drainage class: Somewhat poorly drained*

*Capacity to transmit water (Ksat): High or very high (see Physical Properties table)*

*Flooding frequency: None*

*Ponding frequency: None*

*Seasonal high water table (minimum depth): About 15 to 40 centimeters (see Water Features table)*

*Salinity (maximum): Not saline*

*Sodicity (maximum): Not sodic*

*Available water capacity (entire profile): Moderate (about 18.2 centimeters)*

*Land capability subclass (nonirrigated): 7e*

#### **Vegetation**

*Ecological site ID: F003XN942WA*

*Ecological site scientific name: *Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis* (western hemlock-western redcedar/devilsclub-salmonberry)*

*Ecological site common name: Southern Washington Cascades Moist Frigid Coniferous Forest*

*Common trees: Bigleaf maple, Douglas-fir, grand fir, red alder, western hemlock, western redcedar*

#### **Typical profile**

*Oi—0 to 2 centimeters; slightly decomposed plant material*

*Oe—2 to 5 centimeters; moderately decomposed plant material*

*A—5 to 10 centimeters; paragravelly ashy sandy loam*

*Bw—10 to 25 centimeters; paragravelly ashy coarse sandy loam*

*Bg1—25 to 74 centimeters; paragravelly ashy loamy coarse sand*

2Bg2—74 to 90 centimeters; very gravelly ashy sandy loam  
2Bg3—90 to 150 centimeters; very cobbly ashy sandy loam

### ***Goldenlakes***

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 25 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregongrape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 20 centimeters; paragravelly ashy sandy loam

Bs—20 to 63 centimeters; paragravelly ashy loamy sand

2Bw—63 to 88 centimeters; very stony ashy sandy loam

2R—88 to 150 centimeters; bedrock

### ***Dissimilar Minor Components***

#### **Ingraham soils**

*Composition:* 5 percent

*Landform:* Glacial-valley walls

#### **Sunbeam soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

## **7125—*Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes***

### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 490 to 960 meters

*Mean annual precipitation:* 1805 to 2110 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 90 to 130 days

### **Map Unit Composition**

*Goldenlakes and similar soils:* 40 percent

*Kautz and similar soils:* 30 percent

*Ingraham and similar soils:* 15 percent

*Dissimilar minor components:* 15 percent

### **Goldenlakes**

#### **Setting**

*Landform:* Bedrock benches on glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/*

*Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade  
Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous  
Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 20 centimeters; paragravelly ashy sandy loam

Bs—20 to 63 centimeters; paragravelly ashy loamy sand

2Bw—63 to 88 centimeters; very stony ashy sandy loam

2R—88 to 150 centimeters; bedrock

### **Kautz**

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 17.5 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN943WA  
*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)  
*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest  
*Common trees:* Douglas-fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 8 centimeters; moderately decomposed plant material  
E—8 to 15 centimeters; ashy sandy loam  
Bs1—15 to 26 centimeters; ashy sandy loam  
Bs2—26 to 76 centimeters; paragravelly ashy loamy sand  
2Bw1—76 to 120 centimeters; gravelly ashy sandy loam  
2Bw2—120 to 150 centimeters; very gravelly ashy sandy loam

### **Ingraham**

#### **Setting**

*Landform:* Bedrock benches on glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 65 percent  
*Parent material:* Volcanic ash over andesite  
*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Very low (about 3.2 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN943WA  
*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa* (western hemlock-Douglas-fir/salal-Cascade Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Common trees:* Douglas-fir, western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

E—4 to 7 centimeters; paragravelly ashy sandy loam

Bs—7 to 25 centimeters; paragravelly ashy loamy coarse sand

2R—25 to 150 centimeters; bedrock

**Dissimilar Minor Components**

**Tokaloo soils**

*Composition:* 10 percent

*Landform:* Swales of glacial-valley walls

**Sunbeam soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

**8100—Riverwash-Flett complex, 0 to 25 percent slopes**

**Map Unit Setting**

*Elevation:* 630 to 1400 meters

*Mean annual precipitation:* 1345 to 2770 millimeters

*Mean annual air temperature:* 4 to 7 degrees C

*Frost-free period:* 60 to 90 days

**Map Unit Composition**

*Riverwash:* 60 percent

*Flett and similar soils:* 25 percent

*Dissimilar minor components:* 15 percent

**Riverwash**

**Setting**

*Landform:* Flood plains

**Properties and qualities**

*Slope:* 0 to 25 percent

*Surface area covered by cobbles:* 0 to 30 percent

*Parent material:* Alluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* Unspecified (see Physical Properties table)

*Flooding frequency:* Frequent (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 60 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Unspecified

*Land capability subclass (nonirrigated):* 8

**Vegetation**

*Common trees:* None

**Typical profile**

C—0 to 150 centimeters; stratified gravel to sand

**Flett**

**Setting**

*Landform:* Flood plains, terraces

*Landform position (three-dimensional):* Treads

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 0 to 25 percent

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* Rare (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 8.9 centimeters)

*Land capability subclass (nonirrigated):* 6s

**Vegetation**

*Ecological site ID:* F003XN944WA

*Ecological site scientific name:* *Populus balsamifera* ssp. *trichocarpa*-*Abies amabilis*/  
*Acer circinatum*/*Polystichum munitum* (black cottonwood-Pacific silver fir/vine  
maple/western swordfern)

*Ecological site common name:* Southern Washington Cascades Low Cryic Riparian  
Forest

*Common trees:* Black cottonwood, Douglas-fir, Engelmann spruce, Pacific silver fir,  
western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

A—4 to 32 centimeters; very stony ashy coarse sandy loam

C1—32 to 85 centimeters; extremely stony ashy loamy sand

C2—85 to 115 centimeters; extremely stony ashy loamy coarse sand

C3—115 to 150 centimeters; very gravelly ashy loamy sand

**Dissimilar Minor Components**

**Narada soils**

*Composition:* 10 percent

*Landform:* Flood plains, terraces

**Water**

*Composition:* 5 percent

*Landform:* Flood plains

**8101—Flett-Narada complex, 0 to 25 percent slopes**

**Map Unit Setting**

*General landscape:* Cascade river valleys

*Elevation:* 630 to 1480 meters

*Mean annual precipitation:* 1395 to 2720 millimeters

*Mean annual air temperature:* 4 to 7 degrees C

*Frost-free period:* 60 to 90 days

### **Map Unit Composition**

*Flett and similar soils:* 50 percent

*Narada and similar soils:* 35 percent

*Dissimilar minor components:* 15 percent

### **Flett**

#### **Setting**

*Landform:* Flood plains, terraces

*Landform position (three-dimensional):* Treads

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 25 percent

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* Rare (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 8.9 centimeters)

*Land capability subclass (nonirrigated):* 6s

#### **Vegetation**

*Ecological site ID:* F003XN944WA

*Ecological site scientific name:* *Populus balsamifera* ssp. *trichocarpa*-*Abies amabilis*/ *Acer circinatum*/*Polystichum munitum* (black cottonwood-Pacific silver fir/vine maple/western swordfern)

*Ecological site common name:* Southern Washington Cascades Low Cryic Riparian Forest

*Common trees:* Black cottonwood, Douglas-fir, Engelmann spruce, Pacific silver fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

A—4 to 32 centimeters; very stony ashy coarse sandy loam

C1—32 to 85 centimeters; extremely stony ashy loamy sand

C2—85 to 115 centimeters; extremely stony ashy loamy coarse sand

C3—115 to 150 centimeters; very gravelly ashy loamy sand

### **Narada**

#### **Setting**

*Landform:* Flood plains, terraces

*Landform position (three-dimensional):* Treads

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 25 percent

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

## Soil Survey of Mount Rainier National Park, Washington

*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Moderately well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* Rare (see Water Features table)  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* About 50 to 75 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 18.3 centimeters)  
*Land capability subclass (nonirrigated):* 6c

### **Vegetation**

*Ecological site ID:* F003XN944WA  
*Ecological site scientific name:* *Populus balsamifera* ssp. *trichocarpa*-*Abies amabilis*/ *Acer circinatum*/*Polystichum munitum* (black cottonwood-Pacific silver fir/vine maple/western swordfern)  
*Ecological site common name:* Southern Washington Cascades Low Cryic Riparian Forest  
*Common trees:* Black cottonwood, Douglas-fir, Engelmann spruce, Pacific silver fir, western hemlock, western redcedar

### **Typical profile**

Oe—0 to 3 centimeters; moderately decomposed plant material  
A—3 to 7 centimeters; ashy very fine sandy loam  
AB—7 to 51 centimeters; ashy coarse sandy loam  
Bw—51 to 75 centimeters; ashy coarse sandy loam  
Bg1—75 to 90 centimeters; ashy loamy very fine sand  
Bg2—90 to 110 centimeters; gravelly ashy sandy loam  
Bg3—110 to 150 centimeters; gravelly ashy sandy loam

### **Dissimilar Minor Components**

#### **Frogheaven**

*Composition:* 10 percent  
*Landform:* Depressions of terraces and flood plains

#### **Riverwash**

*Composition:* 5 percent  
*Landform:* Flood plains

## **8110—Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains  
*Elevation:* 640 to 1380 meters  
*Mean annual precipitation:* 1345 to 2720 millimeters  
*Mean annual air temperature:* 4 to 7 degrees C  
*Frost-free period:* 60 to 90 days

### **Map Unit Composition**

*Vantrump and similar soils:* 40 percent  
*Lauhingwater and similar soils:* 30 percent

*Longmire and similar soils:* 15 percent

*Dissimilar minor components:* 15 percent

### ***Vantrump***

#### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 35 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 18.5 centimeters)

*Land capability subclass (nonirrigated):* 6e

#### **Vegetation**

*Ecological site ID:* F003XN946WA

*Ecological site scientific name:* *Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum* (Pacific silver fir-western redcedar/devilsclub/western swordfern)

*Ecological site common name:* Southern Washington Cascades Moist Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, red alder, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

A—5 to 25 centimeters; ashy sandy loam

Bg1—25 to 49 centimeters; ashy sandy loam

Bg2—49 to 71 centimeters; ashy sandy loam

Bg3—71 to 80 centimeters; ashy fine sandy loam

2Bg4—80 to 101 centimeters; very gravelly ashy loamy coarse sand

2Bg5—101 to 150 centimeters; very gravelly ashy sandy loam

### ***Laughingwater***

#### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 35 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19.5 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

### **Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

E1—3 to 10 centimeters; ashy sandy loam

E2—10 to 20 centimeters; ashy loamy sand

Bs1—20 to 32 centimeters; ashy sandy loam

Bs2—32 to 56 centimeters; paragravelly ashy sandy loam

Bs3—56 to 76 centimeters; paragravelly ashy sandy loam

2Bg1—76 to 120 centimeters; gravelly ashy sandy loam

2Bg2—120 to 150 centimeters; very gravelly ashy sandy loam

## ***Longmire***

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 35 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 16.3 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 4 centimeters; moderately decomposed plant material  
E—4 to 7 centimeters; ashy sandy loam  
Bs1—7 to 19 centimeters; ashy loamy sand  
Bs2—19 to 35 centimeters; paragravelly ashy sandy loam  
Bs3—35 to 52 centimeters; ashy loamy coarse sand  
2Bw1—52 to 96 centimeters; gravelly ashy sandy loam  
2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam  
2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

***Dissimilar Minor Components***

**Frogheaven soils**

*Composition:* 10 percent  
*Landform:* Debris aprons on mountain slopes

**Ghost soils, warm**

*Composition:* 5 percent  
*Landform:* Debris aprons on mountain slopes

## **8120—Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes**

***Map Unit Setting***

*General landscape:* Cascade Mountains ([fig. 54](#))  
*Elevation:* 610 to 1460 meters  
*Mean annual precipitation:* 1295 to 2565 millimeters  
*Mean annual air temperature:* 4 to 7 degrees C  
*Frost-free period:* 60 to 90 days

***Map Unit Composition***

*Longmire and similar soils:* 35 percent  
*Lovingwater and similar soils:* 30 percent  
*Vantrump and similar soils:* 20 percent  
*Dissimilar minor components:* 15 percent

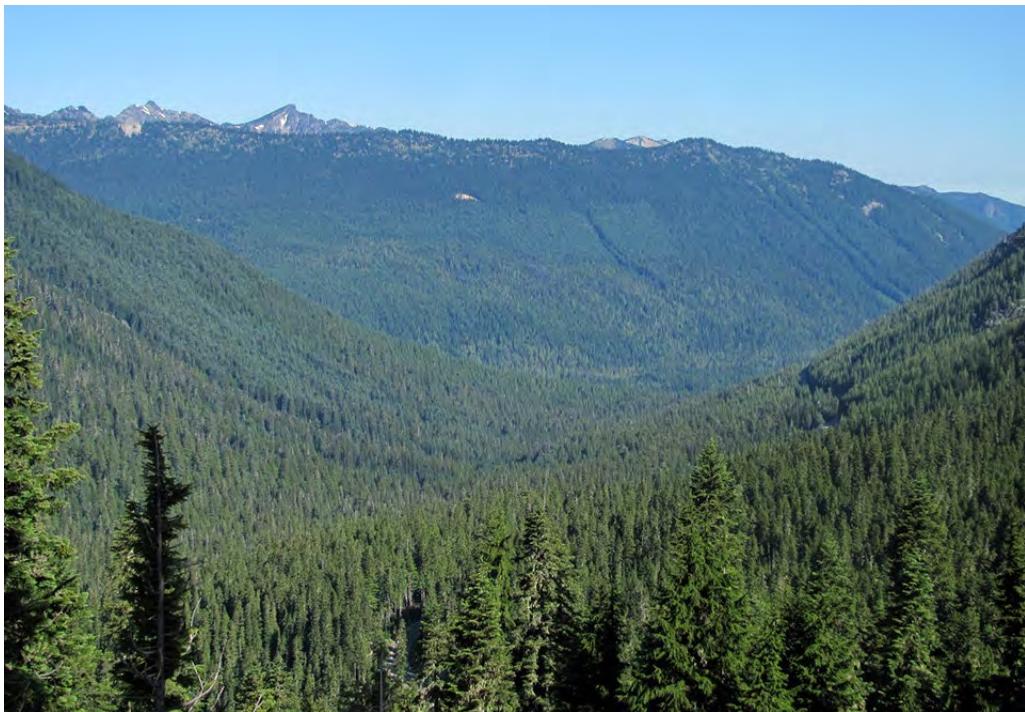
***Longmire***

**Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 5 to 65 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline



**Figure 54.**—Looking northwest from the Cayuse Pass area over Klickitat Creek and the White River to Sourdough Ridge. Area shows transition from the low cryic flood plain of the White River (detailed soil map unit 8100—Riverwash-Flett complex, 0 to 25 percent slopes) to the low cryic low mountain slopes (units such as 8110—Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes, and 8120—Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes). Mid- and upper-slope valley walls are mapped as low cryic high mountain slope units, such as 9110—Longmire-Arahustan complex, 35 to 100 percent slopes, transitioning to high cryic high mountain slope units, such as 9210—Tipsoo-Owyhigh complex, 35 to 100 percent slopes.

*Sodicity (maximum): Not sodic*

*Available water capacity (entire profile): Moderate (about 16.3 centimeters)*

*Land capability subclass (nonirrigated): 7e*

#### **Vegetation**

*Ecological site ID: F003XN947WA*

*Ecological site scientific name: Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name: Southern Washington Cascades Low Cryic Coniferous Forest*

*Common trees: Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar*

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

E—4 to 7 centimeters; ashy sandy loam

Bs1—7 to 19 centimeters; ashy loamy sand

Bs2—19 to 35 centimeters; paragravelly ashy sandy loam

Bs3—35 to 52 centimeters; ashy loamy coarse sand

2Bw1—52 to 96 centimeters; gravelly ashy sandy loam

2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam

2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

## ***Laughingwater***

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 5 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

### **Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

E1—3 to 10 centimeters; ashy sandy loam

E2—10 to 20 centimeters; ashy loamy sand

Bs1—20 to 32 centimeters; ashy sandy loam

Bs2—32 to 56 centimeters; paragravelly ashy sandy loam

Bs3—56 to 76 centimeters; paragravelly ashy sandy loam

2Bg1—76 to 120 centimeters; gravelly ashy sandy loam

2Bg2—120 to 150 centimeters; very gravelly ashy sandy loam

## ***Vantrump***

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 5 to 35 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

## Soil Survey of Mount Rainier National Park, Washington

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 18.5 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN946WA

*Ecological site scientific name:* *Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum* (Pacific silver fir-western redcedar/devilsclub/western swordfern)

*Ecological site common name:* Southern Washington Cascades Moist Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, red alder, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

A—5 to 25 centimeters; ashy sandy loam

Bg1—25 to 49 centimeters; ashy sandy loam

Bg2—49 to 71 centimeters; ashy sandy loam

Bg3—71 to 80 centimeters; ashy fine sandy loam

2Bg4—80 to 101 centimeters; very gravelly ashy loamy coarse sand

2Bg5—101 to 150 centimeters; very gravelly ashy sandy loam

### **Dissimilar Minor Components**

#### **Frogheaven soils**

*Composition:* 10 percent

*Landform:* Debris aprons on mountain slopes

#### **Arahustan soils**

*Composition:* 5 percent

*Landform:* Debris aprons on mountain slopes

## **8125—Vantrump-Laughingwater-Longmire complex, 10 to 65 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 640 to 1320 meters

*Mean annual precipitation:* 1650 to 2260 millimeters

*Mean annual air temperature:* 5 to 7 degrees C

*Frost-free period:* 60 to 90 days

### **Map Unit Composition**

*Vantrump and similar soils:* 35 percent

*Lovingwater and similar soils:* 25 percent

*Longmire and similar soils:* 20 percent

*Dissimilar minor components:* 20 percent

## ***Vantrump***

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 18.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN946WA

*Ecological site scientific name:* *Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum* (Pacific silver fir-western redcedar/devilsclub/western swordfern)

*Ecological site common name:* Southern Washington Cascades Moist Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, red alder, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

A—5 to 25 centimeters; ashy sandy loam

Bg1—25 to 49 centimeters; ashy sandy loam

Bg2—49 to 71 centimeters; ashy sandy loam

Bg3—71 to 80 centimeters; ashy fine sandy loam

2Bg4—80 to 101 centimeters; very gravelly ashy loamy coarse sand

2Bg5—101 to 150 centimeters; very gravelly ashy sandy loam

## ***Laughingwater***

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

### **Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

E1—3 to 10 centimeters; ashy sandy loam

E2—10 to 20 centimeters; ashy loamy sand

Bs1—20 to 32 centimeters; ashy sandy loam

Bs2—32 to 56 centimeters; paragravelly ashy sandy loam

Bs3—56 to 76 centimeters; paragravelly ashy sandy loam

2Bg1—76 to 120 centimeters; gravelly ashy sandy loam

2Bg2—120 to 150 centimeters; very gravelly ashy sandy loam

## **Longmire**

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 16.3 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 4 centimeters; moderately decomposed plant material  
E—4 to 7 centimeters; ashy sandy loam  
Bs1—7 to 19 centimeters; ashy loamy sand  
Bs2—19 to 35 centimeters; paragravelly ashy sandy loam  
Bs3—35 to 52 centimeters; ashy loamy coarse sand  
2Bw1—52 to 96 centimeters; gravelly ashy sandy loam  
2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam  
2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

***Dissimilar Minor Components***

**Arahustan soils**

*Composition:* 10 percent  
*Landform:* Debris aprons on mountain slopes

**Frogheaven soils**

*Composition:* 5 percent  
*Landform:* Debris aprons on mountain slopes

**Ohanapecosh soils**

*Composition:* 5 percent  
*Landform:* Debris aprons on mountain slopes

## **8130—Summerland-Longmire complex, 15 to 100 percent slopes**

***Map Unit Setting***

*General landscape:* Cascade Mountains  
*Elevation:* 690 to 1730 meters  
*Mean annual precipitation:* 1650 to 2820 millimeters  
*Mean annual air temperature:* 3 to 7 degrees C  
*Frost-free period:* 60 to 90 days

***Map Unit Composition***

*Summerland and similar soils:* 70 percent  
*Longmire and similar soils:* 15 percent  
*Dissimilar minor components:* 15 percent

***Summerland***

**Setting**

*Landform:* Glacial-valley walls, debris cones, talus slopes  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 100 percent  
*Parent material:* Mixed colluvium and volcanic ash  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* Very high (see Physical Properties table)  
*Flooding frequency:* None

Ponding frequency: None

Seasonal high water table (minimum depth): More than 200 centimeters

Salinity (maximum): Not saline

Sodicity (maximum): Not sodic

Available water capacity (entire profile): Low (about 9.8 centimeters)

Land capability subclass (nonirrigated): 7e

### Vegetation

Ecological site ID: F003XN948WA

Ecological site scientific name: *Alnus viridis* ssp. *sinuata*-*Acer circinatum/Sambucus racemosa*-*Rubus parviflorus* (Sitka alder-vine maple/red elderberry-thimbleberry)

Ecological site common name: Southern Washington Cascades Low Cryic Deciduous Forest

Common trees: Alaska yellow-cedar, mountain hemlock, noble fir, Pacific silver fir, subalpine fir, western hemlock, western redcedar

### Typical profile

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 38 centimeters; extremely stony ashy sandy loam

Bw1—38 to 84 centimeters; extremely bouldery ashy sandy loam

Bw2—84 to 123 centimeters; extremely stony ashy sandy loam

Bw3—123 to 150 centimeters; extremely cobbley ashy sandy loam

## **Longmire**

### Setting

Landform: Glacial-valley walls

Landform position (three-dimensional): Mountainflanks

Aspect (range): All aspects

### Properties and qualities

Slope: 15 to 100 percent

Parent material: Volcanic ash over colluvium derived from andesite

Depth to restrictive feature: None within a depth of 150 centimeters

Drainage class: Well drained

Capacity to transmit water (Ksat): High or very high (see Physical Properties table)

Flooding frequency: None

Ponding frequency: None

Seasonal high water table (minimum depth): More than 200 centimeters

Salinity (maximum): Not saline

Sodicity (maximum): Not sodic

Available water capacity (entire profile): Moderate (about 16.3 centimeters)

Land capability subclass (nonirrigated): 7e

### Vegetation

Ecological site ID: F003XN947WA

Ecological site scientific name: *Abies amabilis*-*Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

Ecological site common name: Southern Washington Cascades Low Cryic Coniferous Forest

Common trees: Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar

### Typical profile

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

E—4 to 7 centimeters; ashy sandy loam  
Bs1—7 to 19 centimeters; ashy loamy sand  
Bs2—19 to 35 centimeters; paragravelly ashy sandy loam  
Bs3—35 to 52 centimeters; ashy loamy coarse sand  
2Bw1—52 to 96 centimeters; gravelly ashy sandy loam  
2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam  
2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

#### ***Dissimilar Minor Components***

##### **Vantrump soils**

*Composition:* 10 percent  
*Landform:* Swales of glacial-valley walls

##### **Frogheaven soils**

*Composition:* 5 percent  
*Landform:* Swales of glacial-valley walls

### ***8150—Ghost-Frogheaven complex, 0 to 10 percent slopes***

#### ***Map Unit Setting***

*General landscape:* Cascade Mountains  
*Elevation:* 640 to 1260 meters  
*Mean annual precipitation:* 1955 to 2260 millimeters  
*Mean annual air temperature:* 5 to 7 degrees C  
*Frost-free period:* 60 to 90 days

#### ***Map Unit Composition***

*Ghost, warm, and similar soils:* 45 percent  
*Frogheaven and similar soils:* 30 percent  
*Dissimilar minor components:* 25 percent

#### ***Ghost, Warm***

##### **Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 0 to 5 percent  
*Parent material:* Organic material and bands of volcanic ash  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Very poorly drained  
*Capacity to transmit water (Ksat):* Moderately high to very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* Frequent (see Water Features table)  
*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Very high (about 62.1 centimeters)  
*Land capability subclass (nonirrigated):* 6w

**Vegetation**

*Ecological site ID:* R003XN640WA

*Ecological site name:* Southern Washington Cascades Low Cryic Bog or Fen

*Common trees:* None

**Typical profile**

Oa1—0 to 38 centimeters; muck

Oa2—38 to 90 centimeters; muck

Oa3—90 to 110 centimeters; muck

Bg1—110 to 120 centimeters; ashy loamy sand

O'a1—120 to 130 centimeters; muck

O'a2—130 to 145 centimeters; muck

B'g—145 to 150 centimeters; ashy loamy coarse sand

**Frogheaven**

**Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 25.6 centimeters)

*Land capability subclass (nonirrigated):* 6w

**Vegetation**

*Ecological site ID:* F003XN945WA

*Ecological site scientific name:* *Thuja plicata*-*Alnus rubra*/*Oplopanax horridus*/

*Lysichiton americanus* (western hemlock-red alder/devilsclub/American skunkcabbage)

*Ecological site common name:* Southern Washington Cascades Wet Low Cryic Coniferous Forest

*Common trees:* Red alder, western hemlock, western redcedar

**Typical profile**

Oe—0 to 6 centimeters; moderately decomposed plant material

A1—6 to 19 centimeters; mucky ashy fine sandy loam

A2—19 to 24 centimeters; ashy sandy loam

Bg1—24 to 34 centimeters; ashy fine sandy loam

Bg2—34 to 60 centimeters; paragravelly ashy sandy loam

Bg3—60 to 75 centimeters; ashy fine sandy loam

Bg4—75 to 90 centimeters; ashy sandy loam

Bg5—90 to 150 centimeters; ashy sandy loam

### **Dissimilar Minor Components**

#### **Laughingwater soils**

*Composition:* 10 percent

*Landform:* Debris aprons on mountain slopes

#### **Vantrump soils**

*Composition:* 10 percent

*Landform:* Debris aprons on mountain slopes

#### **Water**

*Composition:* 5 percent

*Landform:* Depressions

## **8200—Riverwash-Flett, cold complex, 5 to 50 percent slopes**

### **Map Unit Setting**

*Elevation:* 940 to 1860 meters

*Mean annual precipitation:* 1805 to 3175 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

### **Map Unit Composition**

*Riverwash:* 80 percent

*Flett, cold, and similar soils:* 15 percent

*Dissimilar minor component:* 5 percent

### **Riverwash**

#### **Setting**

*Landform:* Flood plains

#### **Properties and qualities**

*Slope:* 5 to 50 percent

*Surface area covered by cobbles:* 0 to 30 percent

*Parent material:* Alluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* Unspecified (see Physical Properties table)

*Flooding frequency:* Frequent (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 60 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Unspecified

*Land capability subclass (nonirrigated):* 8

#### **Vegetation**

*Common trees:* None

#### **Typical profile**

C—0 to 150 centimeters; stratified gravel to sand

### **Flett, Cold**

#### **Setting**

*Landform:* Flood plains, terraces

*Landform position (three-dimensional):* Treads

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 35 percent

*Parent material:* Alluvium derived from andesite mixed with volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* Rare (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 8.9 centimeters)

*Land capability subclass (nonirrigated):* 6e

#### **Vegetation**

*Ecological site ID:* F003XN949WA

*Ecological site scientific name:* *Callitropsis nootkatensis-Alnus viridis var. sinuata/*  
*Salix barclayi-Rubus pedatus* (Alaska cedar-Sitka alder/Barclay's willow-five-leaved  
bramble)

*Ecological site common name:* Southern Washington Cascades High Cryic Riparian  
Forest

*Common trees:* Black cottonwood, Douglas-fir, Engelmann spruce, Pacific silver fir,  
western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

A—4 to 32 centimeters; very stony ashy coarse sandy loam

C1—32 to 85 centimeters; extremely stony ashy loamy sand

C2—85 to 115 centimeters; extremely stony ashy loamy coarse sand

C3—115 to 150 centimeters; very gravelly ashy loamy sand

### **Dissimilar Minor Component**

#### **Water**

*Composition:* 5 percent

*Landform:* Flood plains

## **8201—Mysticlake-Unicornpeak-Williwakas complex, 0 to 40 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1220 to 1640 meters

*Mean annual precipitation:* 1600 to 2820 millimeters

*Mean annual air temperature:* 3 to 6 degrees C

*Frost-free period:* 30 to 60 days

### ***Map Unit Composition***

*Mysticlake and similar soils:* 50 percent

*Unicornpeak and similar soils:* 25 percent

*Williwakas and similar soils:* 15 percent

*Dissimilar minor components:* 10 percent

### ***Mysticlake***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 40 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.7 centimeters)

*Land capability subclass (nonirrigated):* 6e

#### **Vegetation**

*Ecological site ID:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus* (mountain hemlock-Alaska cedar/Cascade azalea-dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

A1—3 to 6 centimeters; medial sandy loam

A2—6 to 20 centimeters; medial sandy loam

Bw—20 to 32 centimeters; paragravelly medial coarse sandy loam

Bg1—32 to 48 centimeters; medial fine sandy loam

Bg2—48 to 70 centimeters; medial sandy loam

Bg3—70 to 120 centimeters; medial fine sandy loam

2Bg4—120 to 150 centimeters; gravelly medial sandy loam

### ***Unicornpeak***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 5 to 40 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 24.8 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 6 centimeters; moderately decomposed plant material

E—6 to 12 centimeters; medial sandy loam

Bs1—12 to 32 centimeters; medial sandy loam

Bs2—32 to 58 centimeters; medial coarse sandy loam

Bg1—58 to 72 centimeters; medial fine sandy loam

Bg2—72 to 88 centimeters; medial fine sandy loam

2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

## **Williwakas**

### **Setting**

*Landform:* Depressions of cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.9 centimeters)

*Land capability subclass (nonirrigated):* 6w

**Vegetation**

*Ecological site ID:* R003XN540WA

*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland

*Common trees:* None

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 14 centimeters; medial sandy loam

A2—14 to 26 centimeters; medial loamy sand

A3—26 to 36 centimeters; medial sandy loam

Bg1—36 to 43 centimeters; medial fine sandy loam

Bg2—43 to 55 centimeters; medial sandy loam

Bg3—55 to 65 centimeters; medial loamy sand

Bg4—65 to 150 centimeters; medial sandy loam

***Dissimilar Minor Components***

**Ghost soils**

*Composition:* 5 percent

*Landform:* Depressions of cirque floors

**Owyhigh soils**

*Composition:* 5 percent

*Landform:* Cirque floors

**8203—Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes**

***Map Unit Setting***

*General landscape:* Cascade Mountains ([fig. 55](#))

*Elevation:* 980 to 2080 meters

*Mean annual precipitation:* 2160 to 2870 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

***Map Unit Composition***

*Glacierisland and similar soils:* 55 percent

*Sheepskull and similar soils:* 20 percent

*Sluiskin and similar soils:* 15 percent

*Dissimilar minor component:* 10 percent

***Glacierisland***

**Setting**

*Landform:* Lahars, moraines

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 10 to 100 percent

*Parent material:* Till and lahar deposits

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters



**Figure 55.—**Looking south from Burroughs Mountain to Goat Island Mountain. The toe of Emmons Glacier is at right of image, where detailed soil map unit 9263—Tamanos-Glaciers complex, 10 to 65 percent slopes, transitions to units 8200—Riverwash-Flett, cold complex, 5 to 50 percent slopes, and 8203—Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes. On the flanks of Goat Island Mountain, a coniferous overstory indicates areas of unit 9210—Tipsoo-Owyhigh complex, 35 to 100 percent slopes, and avalanche slide paths under deciduous cover indicate areas of unit 8230—Summerland-Tipsoo complex, 15 to 100 percent slopes. The upper reaches of the mountain are mapped mainly as units 9201—Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes, and 9993—Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes.

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 12 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, noble fir, Pacific silver fir, Sitka alder, subalpine fir

#### **Typical profile**

Oi—0 to 4 centimeters; slightly decomposed plant material

Oe—4 to 14 centimeters; moderately decomposed plant material

A—14 to 46 centimeters; very gravelly ashy sandy loam

Bw1—46 to 94 centimeters; very cobbly ashy sandy loam  
Bw2—94 to 150 centimeters; extremely gravelly ashy sandy loam

### ***Sheepskull***

#### **Setting**

*Landform:* Lahars, moraines

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 100 percent

*Parent material:* Till and lahar deposits over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 4.1 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, noble fir, Pacific silver fir, Sitka alder, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 30 centimeters; very gravelly ashy sandy loam

A2—30 to 64 centimeters; extremely cobbly ashy sandy loam

2R—64 to 150 centimeters; bedrock

### ***Sluiskin***

#### **Setting**

*Landform:* Lahars, moraines

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 100 percent

*Parent material:* Till and lahar deposits over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 2.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, noble fir, Pacific silver fir, Sitka alder, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 21 centimeters; very gravelly ashy sandy loam

A2—21 to 33 centimeters; very gravelly ashy sandy loam

2R—33 to 150 centimeters; bedrock

#### ***Dissimilar Minor Component***

#### **Wonderland soils**

*Composition:* 10 percent

*Landform:* Lahars, moraines

### **8210—Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1090 to 1740 meters

*Mean annual precipitation:* 1500 to 2820 millimeters

*Mean annual air temperature:* 3 to 6 degrees C

*Frost-free period:* 30 to 60 days

#### **Map Unit Composition**

*Mysticlake and similar soils:* 45 percent

*Unicornpeak and similar soils:* 30 percent

*Tipsoo and similar soils:* 15 percent

*Dissimilar minor component:* 10 percent

#### ***Mysticlake***

##### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 5 to 40 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.7 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus* (mountain hemlock-Alaska cedar/Cascade azalea-dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

A1—3 to 6 centimeters; medial sandy loam

A2—6 to 20 centimeters; medial sandy loam

Bw—20 to 32 centimeters; paragradeally medial coarse sandy loam

Bg1—32 to 48 centimeters; medial fine sandy loam

Bg2—48 to 70 centimeters; medial sandy loam

Bg3—70 to 120 centimeters; medial fine sandy loam

2Bg4—120 to 150 centimeters; gravelly medial sandy loam

### ***Unicornpeak***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 40 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 24.8 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 6 centimeters; moderately decomposed plant material  
E—6 to 12 centimeters; medial sandy loam  
Bs1—12 to 32 centimeters; medial sandy loam  
Bs2—32 to 58 centimeters; medial coarse sandy loam  
Bg1—58 to 72 centimeters; medial fine sandy loam  
Bg2—72 to 88 centimeters; medial fine sandy loam  
2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

**Tipsoo**

**Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 5 to 40 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.4 centimeters)

*Land capability subclass (nonirrigated):* 6e

**Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa*/*Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 5 centimeters; moderately decomposed plant material  
E—5 to 9 centimeters; paragravelly medial sandy loam  
Bhs—9 to 42 centimeters; paragravelly medial sandy loam  
Bs1—42 to 57 centimeters; medial sandy loam  
Bs2—57 to 73 centimeters; medial loamy sand  
2Bw1—73 to 110 centimeters; gravelly medial sandy loam  
2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

### **Dissimilar Minor Component**

#### **Ghost soils**

*Composition:* 10 percent

*Landform:* Depressions of cirque floors

## **8211—Owyhigh-Mysticlake-Williwakas complex, 0 to 50 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1270 to 1880 meters

*Mean annual precipitation:* 1855 to 2360 millimeters

*Mean annual air temperature:* 3 to 6 degrees C

*Frost-free period:* 30 to 60 days

### **Map Unit Composition**

*Owyhigh and similar soils:* 50 percent

*Mysticlake and similar soils:* 25 percent

*Williwakas and similar soils:* 15 percent

*Dissimilar minor components:* 10 percent

### **Owyhigh**

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 50 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 13.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific

silver fir, subalpine fir

#### **Typical profile**

*Oi*—0 to 1 centimeter; slightly decomposed plant material

*Oe*—1 to 6 centimeters; moderately decomposed plant material

*E*—6 to 18 centimeters; medial sandy loam

Bs1—18 to 34 centimeters; paragravelly medial sandy loam  
Bs2—34 to 52 centimeters; paragravelly medial sandy loam  
Bs3—52 to 80 centimeters; paragravelly medial sandy loam  
2R—80 to 150 centimeters; bedrock

### ***Mysticlake***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 40 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.7 centimeters)

*Land capability subclass (nonirrigated):* 6e

#### **Vegetation**

*Ecological site ID:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana-Callitropsis nootkatensis/*

*Rhododendron albiflorum-Rubus lasiococcus* (mountain hemlock-Alaska cedar/  
Cascade azalea-dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic  
Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific  
silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

A1—3 to 6 centimeters; medial sandy loam

A2—6 to 20 centimeters; medial sandy loam

Bw—20 to 32 centimeters; paragravelly medial coarse sandy loam

Bg1—32 to 48 centimeters; medial fine sandy loam

Bg2—48 to 70 centimeters; medial sandy loam

Bg3—70 to 120 centimeters; medial fine sandy loam

2Bg4—120 to 150 centimeters; gravelly medial sandy loam

### ***Williwakas***

#### **Setting**

*Landform:* Depressions of cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.9 centimeters)

*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* R003XN540WA

*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland

*Common trees:* None

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 14 centimeters; medial sandy loam

A2—14 to 26 centimeters; medial loamy sand

A3—26 to 36 centimeters; medial sandy loam

Bg1—36 to 43 centimeters; medial fine sandy loam

Bg2—43 to 55 centimeters; medial sandy loam

Bg3—55 to 65 centimeters; medial loamy sand

Bg4—65 to 150 centimeters; medial sandy loam

#### **Dissimilar Minor Components**

##### **Ipsut soils**

*Composition:* 5 percent

*Landform:* Cirque floors

##### **Mountwow soils**

*Composition:* 5 percent

*Landform:* Cirque floors

## **8220—Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1050 to 1840 meters

*Mean annual precipitation:* 1450 to 2920 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

#### **Map Unit Composition**

*Tipsoo and similar soils:* 35 percent

*Unicornpeak and similar soils:* 30 percent

*Mysticlake and similar soils:* 20 percent

*Dissimilar minor components:* 15 percent

#### **Tipsoo**

##### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 10 to 55 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 9 centimeters; paragravelly medial sandy loam

Bhs—9 to 42 centimeters; paragravelly medial sandy loam

Bs1—42 to 57 centimeters; medial sandy loam

Bs2—57 to 73 centimeters; medial loamy sand

2Bw1—73 to 110 centimeters; gravelly medial sandy loam

2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

## ***Unicornpeak***

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 10 to 55 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 24.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 6 centimeters; moderately decomposed plant material

E—6 to 12 centimeters; medial sandy loam

Bs1—12 to 32 centimeters; medial sandy loam

Bs2—32 to 58 centimeters; medial coarse sandy loam

Bg1—58 to 72 centimeters; medial fine sandy loam

Bg2—72 to 88 centimeters; medial fine sandy loam

2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

## ***Mysticlake***

### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 10 to 55 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus* (mountain hemlock-Alaska cedar/Cascade azalea-dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

A1—3 to 6 centimeters; medial sandy loam

A2—6 to 20 centimeters; medial sandy loam  
Bw—20 to 32 centimeters; paragravelly medial coarse sandy loam  
Bg1—32 to 48 centimeters; medial fine sandy loam  
Bg2—48 to 70 centimeters; medial sandy loam  
Bg3—70 to 120 centimeters; medial fine sandy loam  
2Bg4—120 to 150 centimeters; gravelly medial sandy loam

#### ***Dissimilar Minor Components***

##### **Williwakas soils**

*Composition:* 10 percent  
*Landform:* Debris aprons on mountain slopes

##### **Owyhigh soils**

*Composition:* 5 percent  
*Landform:* Debris aprons on mountain slopes

### **8225—Mysticlake-Unicornpeak-Tipsoo complex, 10 to 55 percent slopes**

#### ***Map Unit Setting***

*General landscape:* Cascade Mountains  
*Elevation:* 1180 to 1860 meters  
*Mean annual precipitation:* 1550 to 2465 millimeters  
*Mean annual air temperature:* 2 to 6 degrees C  
*Frost-free period:* 30 to 60 days

#### ***Map Unit Composition***

*Mysticlake and similar soils:* 35 percent  
*Unicornpeak and similar soils:* 25 percent  
*Tipsoo and similar soils:* 20 percent  
*Dissimilar minor components:* 20 percent

#### ***Mysticlake***

##### **Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 10 to 55 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* High (about 26.7 centimeters)  
*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus* (mountain hemlock-Alaska cedar/Cascade azalea-dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

A1—3 to 6 centimeters; medial sandy loam

A2—6 to 20 centimeters; medial sandy loam

Bw—20 to 32 centimeters; paragravelly medial coarse sandy loam

Bg1—32 to 48 centimeters; medial fine sandy loam

Bg2—48 to 70 centimeters; medial sandy loam

Bg3—70 to 120 centimeters; medial fine sandy loam

2Bg4—120 to 150 centimeters; gravelly medial sandy loam

### ***Unicornpeak***

#### **Setting**

*Landform:* Debris aprons on mountain slopes

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 55 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 24.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 6 centimeters; moderately decomposed plant material

E—6 to 12 centimeters; medial sandy loam

Bs1—12 to 32 centimeters; medial sandy loam  
Bs2—32 to 58 centimeters; medial coarse sandy loam  
Bg1—58 to 72 centimeters; medial fine sandy loam  
Bg2—72 to 88 centimeters; medial fine sandy loam  
2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

### ***Tipsoo***

#### **Setting**

*Landform:* Debris aprons on mountain slopes  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 55 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* High (about 23.4 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA  
*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)  
*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest  
*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 5 centimeters; moderately decomposed plant material  
E—5 to 9 centimeters; paragravelly medial sandy loam  
Bhs—9 to 42 centimeters; paragravelly medial sandy loam  
Bs1—42 to 57 centimeters; medial sandy loam  
Bs2—57 to 73 centimeters; medial loamy sand  
2Bw1—73 to 110 centimeters; gravelly medial sandy loam  
2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

### ***Dissimilar Minor Components***

#### **Owyhigh soils**

*Composition:* 10 percent  
*Landform:* Debris aprons on mountain slopes

#### **Ipsut soils**

*Composition:* 5 percent  
*Landform:* Debris aprons on mountain slopes

**Williwakas soils**

*Composition:* 5 percent

*Landform:* Debris aprons on mountain slopes

**8230—Summerland-Tipsoo complex, 15 to 100 percent slopes**

**Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1010 to 2110 meters

*Mean annual precipitation:* 1500 to 2970 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

**Map Unit Composition**

*Summerland, cold, and similar soils:* 70 percent

*Tipsoo and similar soils:* 15 percent

*Dissimilar minor components:* 15 percent

**Summerland, Cold**

**Setting**

*Landform:* Glacial-valley walls, debris cones, talus slopes

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Mixed colluvium and volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* Very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* F003XN952WA

*Ecological site scientific name:* *Alnus viridis* ssp. *sinuata*-*Acer circinatum/Sorbus sitchensis/Veratrum viride* (Sitka alder-vine maple/Sitka mountain-ash/false hellebore)

*Ecological site common name:* Southern Washington Cascades High Cryic Deciduous Forest

*Common trees:* Alaska yellow-cedar, mountain hemlock, noble fir, Pacific silver fir, subalpine fir, western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 38 centimeters; extremely stony ashy sandy loam

Bw1—38 to 84 centimeters; extremely bouldery ashy sandy loam

Bw2—84 to 123 centimeters; extremely stony ashy sandy loam

Bw3—123 to 150 centimeters; extremely cobbley ashy sandy loam

### ***Tipsoo***

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 9 centimeters; paragravelly medial sandy loam

Bhs—9 to 42 centimeters; paragravelly medial sandy loam

Bs1—42 to 57 centimeters; medial sandy loam

Bs2—57 to 73 centimeters; medial loamy sand

2Bw1—73 to 110 centimeters; gravelly medial sandy loam

2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

### ***Dissimilar Minor Components***

#### **Wonderland soils**

*Composition:* 10 percent

*Landform:* Swales of glacial-valley walls

#### **Glacierisland soils**

*Composition:* 5 percent

*Landform:* Glacial-valley walls

## **8250—Ghost-Williwakas-Mountwow, moist complex, 0 to 20 percent slopes**

### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1160 to 1780 meters

*Mean annual precipitation:* 2055 to 2920 millimeters

*Mean annual air temperature:* 3 to 6 degrees C

*Frost-free period:* 30 to 60 days

### ***Map Unit Composition***

*Ghost and similar soils:* 35 percent

*Williwakas and similar soils:* 30 percent

*Mountwow, moist, and similar soils:* 20 percent

*Dissimilar minor components:* 15 percent

### ***Ghost***

#### **Setting**

*Landform:* Depressions of cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Organic material and bands of volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Very poorly drained

*Capacity to transmit water (Ksat):* Moderately high to very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very high (about 62.1 centimeters)

*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* R003XN641WA

*Ecological site name:* Southern Washington Cascades High Cryic Bog or Fen

*Common trees:* None

#### **Typical profile**

Oa1—0 to 38 centimeters; muck

Oa2—38 to 90 centimeters; muck

Oa3—90 to 110 centimeters; muck

Bg1—110 to 120 centimeters; ashy loamy sand

O'a1—120 to 130 centimeters; muck

O'a2—130 to 145 centimeters; muck

B'g—145 to 150 centimeters; ashy loamy coarse sand

### ***Williwakas***

#### **Setting**

*Landform:* Depressions of cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.9 centimeters)

*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* R003XN540WA

*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland

*Common trees:* None

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 14 centimeters; medial sandy loam

A2—14 to 26 centimeters; medial loamy sand

A3—26 to 36 centimeters; medial sandy loam

Bg1—36 to 43 centimeters; medial fine sandy loam

Bg2—43 to 55 centimeters; medial sandy loam

Bg3—55 to 65 centimeters; medial loamy sand

Bg4—65 to 150 centimeters; medial sandy loam

### ***Mountwow, Moist***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 20 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravely medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam  
Bw3—26 to 37 centimeters; medial loamy sand  
Agb1—37 to 44 centimeters; medial sandy loam  
Bgb1—44 to 51 centimeters; paragravelly medial sandy loam  
Bgb2—51 to 60 centimeters; medial coarse sandy loam  
Bgb3—60 to 66 centimeters; medial fine sandy loam  
2Agb2—66 to 85 centimeters; medial sandy loam  
2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

#### ***Dissimilar Minor Components***

##### **Unicornpeak soils**

*Composition:* 10 percent

*Landform:* Cirque floors

##### **Water**

*Composition:* 5 percent

*Landform:* Depressions of cirque floors

### ***8251—Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes***

#### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1100 to 1890 meters

*Mean annual precipitation:* 2055 to 2970 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

#### ***Map Unit Composition***

*Mountwow, moist, and similar soils:* 50 percent

*Williwakas and similar soils:* 25 percent

*Unicornpeak and similar soils:* 15 percent

*Dissimilar minor component:* 10 percent

#### ***Mountwow, Moist***

##### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 5 to 40 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)  
*Land capability subclass (nonirrigated):* 6e

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland  
*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
A—2 to 10 centimeters; medial sandy loam  
Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam  
Bw2—14 to 26 centimeters; medial fine sandy loam  
Bw3—26 to 37 centimeters; medial loamy sand  
Agb1—37 to 44 centimeters; medial sandy loam  
Bgb1—44 to 51 centimeters; paragravelly medial sandy loam  
Bgb2—51 to 60 centimeters; medial coarse sandy loam  
Bgb3—60 to 66 centimeters; medial fine sandy loam  
2Agb2—66 to 85 centimeters; medial sandy loam  
2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### **Williwakas**

#### **Setting**

*Landform:* Depressions of cirque floors  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 10 percent  
*Parent material:* Volcanic ash  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* Frequent (see Water Features table)  
*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* High (about 26.9 centimeters)  
*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* R003XN540WA

*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland  
*Common trees:* None

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
A1—2 to 14 centimeters; medial sandy loam  
A2—14 to 26 centimeters; medial loamy sand  
A3—26 to 36 centimeters; medial sandy loam  
Bg1—36 to 43 centimeters; medial fine sandy loam  
Bg2—43 to 55 centimeters; medial sandy loam

Bg3—55 to 65 centimeters; medial loamy sand  
Bg4—65 to 150 centimeters; medial sandy loam

### ***Unicornpeak***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 40 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 24.8 centimeters)

*Land capability subclass (nonirrigated):* 6e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 6 centimeters; moderately decomposed plant material

E—6 to 12 centimeters; medial sandy loam

Bs1—12 to 32 centimeters; medial sandy loam

Bs2—32 to 58 centimeters; medial coarse sandy loam

Bg1—58 to 72 centimeters; medial fine sandy loam

Bg2—72 to 88 centimeters; medial fine sandy loam

2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

### ***Dissimilar Minor Component***

#### **Ghost soils**

*Composition:* 10 percent

*Landform:* Depressions of cirque floors

## **8252—Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes**

### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1300 to 1960 meters

*Mean annual precipitation:* 2160 to 2820 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

### ***Map Unit Composition***

*Mountwow, moist, and similar soils:* 45 percent

*Unicornpeak and similar soils:* 20 percent

*Williwakas and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

### ***Mountwow, Moist***

#### **Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 55 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA ([fig. 56](#))

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam

2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### ***Unicornpeak***

#### **Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects



Figure 56.—Hoary marmot (*Marmota caligata*) in an area of Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA) rangeland ecological site on the Mountwow soil in detailed soil map unit 8252—Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes.

#### Properties and qualities

*Slope:* 5 to 55 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 24.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### Vegetation

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 6 centimeters; moderately decomposed plant material  
E—6 to 12 centimeters; medial sandy loam  
Bs1—12 to 32 centimeters; medial sandy loam  
Bs2—32 to 58 centimeters; medial coarse sandy loam  
Bg1—58 to 72 centimeters; medial fine sandy loam  
Bg2—72 to 88 centimeters; medial fine sandy loam  
2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

**Williwakas**

**Setting**

*Landform:* Depressions of cirques  
*Landform position (three-dimensional):* Mountainbases  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 0 to 10 percent  
*Parent material:* Volcanic ash  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* Frequent (see Water Features table)  
*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* High (about 26.9 centimeters)  
*Land capability subclass (nonirrigated):* 6w

**Vegetation**

*Ecological site ID:* R003XN540WA  
*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland  
*Common trees:* None

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
A1—2 to 14 centimeters; medial sandy loam  
A2—14 to 26 centimeters; medial loamy sand  
A3—26 to 36 centimeters; medial sandy loam  
Bg1—36 to 43 centimeters; medial fine sandy loam  
Bg2—43 to 55 centimeters; medial sandy loam  
Bg3—55 to 65 centimeters; medial loamy sand  
Bg4—65 to 150 centimeters; medial sandy loam

**Dissimilar Minor Components**

**Owyhigh soils**

*Composition:* 10 percent  
*Landform:* Cirques

**Rock outcrop**

*Composition:* 10 percent

## **8255—*Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes***

### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1300 to 1780 meters

*Mean annual precipitation:* 1650 to 2565 millimeters

*Mean annual air temperature:* 2 to 5 degrees C

*Frost-free period:* 30 to 60 days

### ***Map Unit Composition***

*Ghost and similar soils:* 35 percent

*Williwakas and similar soils:* 30 percent

*Mountwow and similar soils:* 20 percent

*Dissimilar minor components:* 15 percent

### ***Ghost***

#### **Setting**

*Landform:* Depressions of cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Organic material and bands of volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Very poorly drained

*Capacity to transmit water (Ksat):* Moderately high to very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very high (about 62.1 centimeters)

*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* R003XN641WA

*Ecological site name:* Southern Washington Cascades High Cryic Bog or Fen

*Common trees:* None

#### **Typical profile**

Oa1—0 to 38 centimeters; muck

Oa2—38 to 90 centimeters; muck

Oa3—90 to 110 centimeters; muck

Bg1—110 to 120 centimeters; ashy loamy sand

O'a1—120 to 130 centimeters; muck

O'a2—130 to 145 centimeters; muck

B'g—145 to 150 centimeters; ashy loamy coarse sand

## ***Williwakas***

### **Setting**

*Landform:* Depressions of cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.9 centimeters)

*Land capability subclass (nonirrigated):* 6w

### **Vegetation**

*Ecological site ID:* R003XN540WA

*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland

*Common trees:* None

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 14 centimeters; medial sandy loam

A2—14 to 26 centimeters; medial loamy sand

A3—26 to 36 centimeters; medial sandy loam

Bg1—36 to 43 centimeters; medial fine sandy loam

Bg2—43 to 55 centimeters; medial sandy loam

Bg3—55 to 65 centimeters; medial loamy sand

Bg4—65 to 150 centimeters; medial sandy loam

## ***Mountwow***

### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 20 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 6w

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam

2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

#### **Dissimilar Minor Components**

##### **Unicornpeak soils**

*Composition:* 10 percent

*Landform:* Cirque floors

##### **Water**

*Composition:* 5 percent

*Landform:* Depressions of cirque floors

## **8256—Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains ([fig. 57](#))

*Elevation:* 1210 to 1980 meters

*Mean annual precipitation:* 1600 to 2820 millimeters

*Mean annual air temperature:* 2 to 5 degrees C

*Frost-free period:* 30 to 60 days

#### **Map Unit Composition**

*Mountwow and similar soils:* 50 percent

*Williwakas and similar soils:* 20 percent

*Unicornpeak and similar soils:* 15 percent

*Dissimilar minor components:* 15 percent



Figure 57.—View from Grand Park looking toward Mount Rainier over an area of detailed soil map unit 8256—Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes. Coniferous trees indicate areas of unit 8220—Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes.

### ***Mountwow***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 0 to 30 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 6w

### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam

2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

## ***Williwakas***

### **Setting**

*Landform:* Depressions of cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.9 centimeters)

*Land capability subclass (nonirrigated):* 6w

### **Vegetation**

*Ecological site ID:* R003XN540WA

*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland

*Common trees:* None

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 14 centimeters; medial sandy loam

A2—14 to 26 centimeters; medial loamy sand

A3—26 to 36 centimeters; medial sandy loam

Bg1—36 to 43 centimeters; medial fine sandy loam

Bg2—43 to 55 centimeters; medial sandy loam

Bg3—55 to 65 centimeters; medial loamy sand  
Bg4—65 to 150 centimeters; medial sandy loam

### ***Unicornpeak***

#### **Setting**

*Landform:* Cirque floors

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 30 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 24.8 centimeters)

*Land capability subclass (nonirrigated):* 6c

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 6 centimeters; moderately decomposed plant material

E—6 to 12 centimeters; medial sandy loam

Bs1—12 to 32 centimeters; medial sandy loam

Bs2—32 to 58 centimeters; medial coarse sandy loam

Bg1—58 to 72 centimeters; medial fine sandy loam

Bg2—72 to 88 centimeters; medial fine sandy loam

2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

### ***Dissimilar Minor Components***

#### **Wahpenayo soils**

*Composition:* 10 percent

*Landform:* Cirque floors

#### **Ghost soils**

*Composition:* 5 percent

*Landform:* Depressions of cirque floors

## 8257—Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1260 to 2020 meters

*Mean annual precipitation:* 1550 to 2920 millimeters

*Mean annual air temperature:* 2 to 5 degrees C

*Frost-free period:* 30 to 60 days

### **Map Unit Composition**

*Wahpenayo and similar soils:* 40 percent

*Mountwow and similar soils:* 25 percent

*Williwakas and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

### **Wahpenayo**

#### **Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 45 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 50 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 16.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 16 centimeters; paragravelly medial sandy loam

A2—16 to 45 centimeters; paragravelly medial sandy loam

Bg1—45 to 52 centimeters; medial fine sandy loam

Bg2—52 to 64 centimeters; medial loam

Bg3—64 to 75 centimeters; medial coarse sandy loam

Bg4—75 to 90 centimeters; medial fine sandy loam

2R—90 to 150 centimeters; bedrock

### **Mountwow**

#### **Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 10 to 45 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam

2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

## **Williwakas**

### **Setting**

*Landform:* Depressions of cirques

*Landform position (three-dimensional):* Mountainbases

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 0 to 10 percent

*Parent material:* Volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* Frequent (see Water Features table)

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.9 centimeters)

*Land capability subclass (nonirrigated):* 6w

**Vegetation**

*Ecological site ID:* R003XN540WA

*Ecological site name:* Southern Washington Cascades Wet Subalpine Parkland

*Common trees:* None

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 14 centimeters; medial sandy loam

A2—14 to 26 centimeters; medial loamy sand

A3—26 to 36 centimeters; medial sandy loam

Bg1—36 to 43 centimeters; medial fine sandy loam

Bg2—43 to 55 centimeters; medial sandy loam

Bg3—55 to 65 centimeters; medial loamy sand

Bg4—65 to 150 centimeters; medial sandy loam

***Dissimilar Minor Components***

**Owyhigh soils**

*Composition:* 10 percent

*Landform:* Cirques

**Unicornpeak soils**

*Composition:* 10 percent

*Landform:* Cirques

**9100—Arahustan-Ohanapecosh-Longmire complex, 15 to 100 percent slopes**

***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 720 to 1760 meters

*Mean annual precipitation:* 1295 to 2665 millimeters

*Mean annual air temperature:* 4 to 7 degrees C

*Frost-free period:* 60 to 90 days

***Map Unit Composition***

*Arahustan and similar soils:* 50 percent

*Ohanapecosh and similar soils:* 25 percent

*Longmire and similar soils:* 15 percent

*Dissimilar minor components:* 10 percent

***Arahustan***

**Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 20 centimeters; ashy loamy sand

Bs1—20 to 36 centimeters; paragradeally ashy loamy sand

Bs2—36 to 60 centimeters; ashy sandy loam

2Bw—60 to 70 centimeters; very gravelly ashy sandy loam

2R—70 to 150 centimeters; bedrock

### ***Ohanapecosh***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

E—3 to 14 centimeters; ashy loamy sand  
Bs1—14 to 30 centimeters; paragravelly ashy sandy loam  
Bs2—30 to 45 centimeters; paragravelly ashy sandy loam  
2R—45 to 150 centimeters; bedrock

### ***Longmire***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 16.3 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

E—4 to 7 centimeters; ashy sandy loam

Bs1—7 to 19 centimeters; ashy loamy sand

Bs2—19 to 35 centimeters; paragravelly ashy sandy loam

Bs3—35 to 52 centimeters; ashy loamy coarse sand

2Bw1—52 to 96 centimeters; gravelly ashy sandy loam

2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam

2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

### ***Dissimilar Minor Components***

#### **Rock outcrop**

*Composition:* 5 percent

#### **Vantrump soils**

*Composition:* 5 percent

*Landform:* Swales of ridges

## **9101—Ohanapecosh-Arahustan-Summerland complex, 20 to 100 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 690 to 1800 meters

*Mean annual precipitation:* 1450 to 2770 millimeters

*Mean annual air temperature:* 4 to 7 degrees C

*Frost-free period:* 60 to 90 days

### **Map Unit Composition**

*Ohanapecosh and similar soils:* 50 percent

*Arahustan and similar soils:* 25 percent

*Summerland and similar soils:* 15 percent

*Dissimilar minor components:* 10 percent

### **Ohanapecosh**

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium*

*membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

E—3 to 14 centimeters; ashy loamy sand

Bs1—14 to 30 centimeters; paragravelly ashy sandy loam

Bs2—30 to 45 centimeters; paragravelly ashy sandy loam  
2R—45 to 150 centimeters; bedrock

### **Arahustan**

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 20 centimeters; ashy loamy sand

Bs1—20 to 36 centimeters; paragravelly ashy loamy sand

Bs2—36 to 60 centimeters; ashy sandy loam

2Bw—60 to 70 centimeters; very gravelly ashy sandy loam

2R—70 to 150 centimeters; bedrock

### **Summerland**

#### **Setting**

*Landform:* Talus slopes

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 100 percent

*Parent material:* Mixed colluvium and volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* Very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN948WA

*Ecological site scientific name:* *Alnus viridis ssp. sinuata-Acer circinatum/Sambucus racemosa-Rubus parviflorus* (Sitka alder-vine maple/red elderberry-thimbleberry)

*Ecological site common name:* Southern Washington Cascades Low Cryic Deciduous Forest

*Common trees:* Alaska yellow-cedar, mountain hemlock, noble fir, Pacific silver fir, subalpine fir, western hemlock, western redcedar

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 38 centimeters; extremely stony ashy sandy loam

Bw1—38 to 84 centimeters; extremely bouldery ashy sandy loam

Bw2—84 to 123 centimeters; extremely stony ashy sandy loam

Bw3—123 to 150 centimeters; extremely cobbley ashy sandy loam

#### **Dissimilar Minor Components**

##### **Rock outcrop**

*Composition:* 5 percent

##### **Rubbleland, talus**

*Composition:* 5 percent

*Landform:* Talus slopes

### **9110—Longmire-Arahustan complex, 35 to 100 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 550 to 1700 meters

*Mean annual precipitation:* 1295 to 2870 millimeters

*Mean annual air temperature:* 3 to 7 degrees C

*Frost-free period:* 60 to 90 days

#### **Map Unit Composition**

*Longmire and similar soils:* 45 percent

*Arahustan and similar soils:* 35 percent

*Dissimilar minor components:* 20 percent

#### **Longmire**

##### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 35 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 16.3 centimeters)  
*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA  
*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)  
*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest  
*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 4 centimeters; moderately decomposed plant material  
E—4 to 7 centimeters; ashy sandy loam  
Bs1—7 to 19 centimeters; ashy loamy sand  
Bs2—19 to 35 centimeters; paragravelly ashy sandy loam  
Bs3—35 to 52 centimeters; ashy loamy coarse sand  
2Bw1—52 to 96 centimeters; gravelly ashy sandy loam  
2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam  
2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

## ***Arahustan***

### **Setting**

*Landform:* Glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects  
*Parent material:* Volcanic ash and colluvium over andesite

### **Properties and qualities**

*Slope:* 35 to 100 percent  
*Parent material:* Volcanic ash and colluvium over andesite  
*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Low (about 9.5 centimeters)  
*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 20 centimeters; ashy loamy sand

Bs1—20 to 36 centimeters; paragradeally ashy loamy sand

Bs2—36 to 60 centimeters; ashy sandy loam

2Bw—60 to 70 centimeters; very gravelly ashy sandy loam

2R—70 to 150 centimeters; bedrock

***Dissimilar Minor Components***

**Frogheaven soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

**Ohanapecosh soils**

*Composition:* 5 percent

*Landform:* Glacial-valley walls

**Rock outcrop**

*Composition:* 5 percent

**Vantrump soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

**9120—Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes**

***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 650 to 1700 meters

*Mean annual precipitation:* 1395 to 2870 millimeters

*Mean annual air temperature:* 4 to 7 degrees C

*Frost-free period:* 60 to 90 days

***Map Unit Composition***

*Longmire and similar soils:* 45 percent

*Arahustan and similar soils:* 25 percent

*Vantrump and similar soils:* 20 percent

*Dissimilar minor components:* 10 percent

## ***Longmire***

### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 20 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 16.3 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

E—4 to 7 centimeters; ashy sandy loam

Bs1—7 to 19 centimeters; ashy loamy sand

Bs2—19 to 35 centimeters; paragravelly ashy sandy loam

Bs3—35 to 52 centimeters; ashy loamy coarse sand

2Bw1—52 to 96 centimeters; gravelly ashy sandy loam

2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam

2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

## ***Arahustan***

### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 20 to 65 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 20 centimeters; ashy loamy sand

Bs1—20 to 36 centimeters; paragravelly ashy loamy sand

Bs2—36 to 60 centimeters; ashy sandy loam

2Bw—60 to 70 centimeters; very gravelly ashy sandy loam

2R—70 to 150 centimeters; bedrock

## ***Vantrump***

### **Setting**

*Landform:* Swales of glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 20 to 35 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 18.5 centimeters)

*Land capability subclass (nonirrigated):* 6e

### **Vegetation**

*Ecological site ID:* F003XN946WA

*Ecological site scientific name:* *Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum* (Pacific silver fir-western redcedar/devilsclub/western swordfern)

*Ecological site common name:* Southern Washington Cascades Moist Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, red alder, western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
Oe—2 to 5 centimeters; moderately decomposed plant material  
A—5 to 25 centimeters; ashy sandy loam  
Bg1—25 to 49 centimeters; ashy sandy loam  
Bg2—49 to 71 centimeters; ashy sandy loam  
Bg3—71 to 80 centimeters; ashy fine sandy loam  
2Bg4—80 to 101 centimeters; very gravelly ashy loamy coarse sand  
2Bg5—101 to 150 centimeters; very gravelly ashy sandy loam

**Dissimilar Minor Components**

**Frogheaven soils**

*Composition:* 5 percent  
*Landform:* Swales of glacial-valley walls

**Ohanapecosh soils**

*Composition:* 5 percent  
*Landform:* Glacial-valley walls

**9125—Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes**

**Map Unit Setting**

*General landscape:* Cascade Mountains  
*Elevation:* 660 to 1480 meters  
*Mean annual precipitation:* 1650 to 2465 millimeters  
*Mean annual air temperature:* 4 to 7 degrees C  
*Frost-free period:* 60 to 90 days

**Map Unit Composition**

*Longmire and similar soils:* 40 percent  
*Arahustan and similar soils:* 25 percent  
*Ohanapecosh and similar soils:* 15 percent  
*Dissimilar minor components:* 20 percent

**Longmire**

**Setting**

*Landform:* Glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 65 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 16.3 centimeters)  
*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, Engelmann spruce, noble fir, Pacific silver fir, western hemlock, western redcedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 4 centimeters; moderately decomposed plant material

E—4 to 7 centimeters; ashy sandy loam

Bs1—7 to 19 centimeters; ashy loamy sand

Bs2—19 to 35 centimeters; paragradeally ashy sandy loam

Bs3—35 to 52 centimeters; ashy loamy coarse sand

2Bw1—52 to 96 centimeters; gravelly ashy sandy loam

2Bw2—96 to 111 centimeters; very gravelly ashy coarse sandy loam

2Bw3—111 to 150 centimeters; very cobbly ashy coarse sandy loam

### **Arahustan**

#### **Setting**

*Landform:* Bedrock benches on glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 65 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.5 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 8 centimeters; moderately decomposed plant material

E—8 to 20 centimeters; ashy loamy sand

Bs1—20 to 36 centimeters; paragradeally ashy loamy sand

Bs2—36 to 60 centimeters; ashy sandy loam  
2Bw—60 to 70 centimeters; very gravelly ashy sandy loam  
2R—70 to 150 centimeters; bedrock

### ***Ohanapecosh***

#### **Setting**

*Landform:* Bedrock benches on glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 65 percent  
*Parent material:* Volcanic ash and colluvium over andesite  
*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Very low (about 6.4 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN947WA  
*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)  
*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest  
*Common trees:* Douglas-fir, noble fir, Pacific silver fir, western hemlock, western white pine

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material  
Oe—1 to 3 centimeters; moderately decomposed plant material  
E—3 to 14 centimeters; ashy loamy sand  
Bs1—14 to 30 centimeters; paragravelly ashy sandy loam  
Bs2—30 to 45 centimeters; paragravelly ashy sandy loam  
2R—45 to 150 centimeters; bedrock

### ***Dissimilar Minor Components***

#### **Vantrump soils**

*Composition:* 10 percent  
*Landform:* Swales of glacial-valley walls

#### **Frogheaven soils**

*Composition:* 5 percent  
*Landform:* Swales of glacial-valley walls

#### **Laughingwater soils**

*Composition:* 5 percent  
*Landform:* Glacial-valley walls

## 9200—Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes

### Map Unit Setting

General landscape: Cascade Mountains

Elevation: 1040 to 1980 meters

Mean annual precipitation: 1450 to 2870 millimeters

Mean annual air temperature: 2 to 7 degrees C

Frost-free period: 30 to 60 days

### Map Unit Composition

Owyhigh and similar soils: 50 percent

Ipsut and similar soils: 25 percent

Tipsoo and similar soils: 15 percent

Dissimilar minor components: 10 percent

### Owyhigh

#### Setting

Landform: Ridges

Landform position (three-dimensional): Mountaintops

Aspect (range): All aspects

#### Properties and qualities

Slope: 25 to 100 percent

Parent material: Volcanic ash and colluvium over andesite

Depth to restrictive feature: 50 to 100 centimeters to lithic bedrock

Drainage class: Well drained

Capacity to transmit water ( $K_{sat}$ ): High or very high (see Physical Properties table)

Flooding frequency: None

Ponding frequency: None

Seasonal high water table (minimum depth): More than 200 centimeters

Salinity (maximum): Not saline

Sodicity (maximum): Not sodic

Available water capacity (entire profile): Low (about 13.7 centimeters)

Land capability subclass (nonirrigated): 7e

#### Vegetation

Ecological site ID: F003XN951WA

Ecological site scientific name: *Tsuga mertensiana*-*Abies lasiocarpa*/*Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

Ecological site common name: Southern Washington Cascades High Cryic Coniferous Forest

Common trees: Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### Typical profile

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 6 centimeters; moderately decomposed plant material

E—6 to 18 centimeters; medial sandy loam

Bs1—18 to 34 centimeters; paragravelly medial sandy loam

Bs2—34 to 52 centimeters; paragravelly medial sandy loam

Bs3—52 to 80 centimeters; paragravelly medial sandy loam  
2R—80 to 150 centimeters; bedrock

### ***Ipsut***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 7.2 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 8 centimeters; medial loamy sand

Bs1—8 to 18 centimeters; paragravelly medial sandy loam

Bs2—18 to 30 centimeters; medial sandy loam

Bs3—30 to 40 centimeters; medial sandy loam

2R—40 to 150 centimeters; bedrock

### ***Tipsoo***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 9 centimeters; paragravelly medial sandy loam

Bhs—9 to 42 centimeters; paragravelly medial sandy loam

Bs1—42 to 57 centimeters; medial sandy loam

Bs2—57 to 73 centimeters; medial loamy sand

2Bw1—73 to 110 centimeters; gravelly medial sandy loam

2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

#### ***Dissimilar Minor Components***

##### **Rock outcrop**

*Composition:* 5 percent

##### **Unicornpeak soils**

*Composition:* 5 percent

*Landform:* Swales of ridges

### **9201—Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes**

#### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 980 to 2170 meters

*Mean annual precipitation:* 1395 to 3175 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

#### ***Map Unit Composition***

*Sluiskin and similar soils:* 40 percent

*Owyhigh and similar soils:* 25 percent

*Summerland, cold, and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

#### ***Sluiskin***

##### **Setting**

*Landform:* Talus slopes

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Till and lahar deposits over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 2.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, noble fir, Pacific silver fir, Sitka alder, subalpine fir

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 21 centimeters; very gravelly ashy sandy loam

A2—21 to 33 centimeters; very gravelly ashy sandy loam

2R—33 to 150 centimeters; bedrock

**Owyhigh**

**Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 13.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

**Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material  
Oe—1 to 6 centimeters; moderately decomposed plant material  
E—6 to 18 centimeters; medial sandy loam  
Bs1—18 to 34 centimeters; paragravelly medial sandy loam  
Bs2—34 to 52 centimeters; paragravelly medial sandy loam  
Bs3—52 to 80 centimeters; paragravelly medial sandy loam  
2R—80 to 150 centimeters; bedrock

***Summerland, Cold***

**Setting**

*Landform:* Talus slopes

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Mixed colluvium and volcanic ash

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* Very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 9.8 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* F003XN952WA

*Ecological site scientific name:* *Alnus viridis* ssp. *sinuata*-*Acer circinatum/Sorbus sitchensis/Veratrum viride* (Sitka alder-vine maple/Sitka mountain-ash/false hellebore)

*Ecological site common name:* Southern Washington Cascades High Cryic Deciduous Forest

*Common trees:* Alaska yellow-cedar, mountain hemlock, noble fir, Pacific silver fir, subalpine fir, western hemlock, western redcedar

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
A—2 to 38 centimeters; extremely stony ashy sandy loam  
Bw1—38 to 84 centimeters; extremely bouldery ashy sandy loam  
Bw2—84 to 123 centimeters; extremely stony ashy sandy loam  
Bw3—123 to 150 centimeters; extremely cobbly ashy sandy loam

***Dissimilar Minor Components***

**Rock outcrop**

*Composition:* 10 percent

**Rubbleland, talus**

*Composition:* 10 percent  
*Landform:* Talus slopes

**9210—Tipsoo-Owyhigh complex, 35 to 100 percent slopes**

**Map Unit Setting**

*General landscape:* Cascade Mountains  
*Elevation:* 1020 to 2040 meters  
*Mean annual precipitation:* 1345 to 3175 millimeters  
*Mean annual air temperature:* 2 to 6 degrees C  
*Frost-free period:* 30 to 60 days

**Map Unit Composition**

*Tipsoo and similar soils:* 45 percent  
*Owyhigh and similar soils:* 35 percent  
*Dissimilar minor components:* 20 percent

**Tipsoo**

**Setting**

*Landform:* Glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 35 to 100 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* High (about 23.4 centimeters)  
*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* F003XN951WA  
*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa*/*Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)  
*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest  
*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

**Typical profile**

*Oi*—0 to 2 centimeters; slightly decomposed plant material  
*Oe*—2 to 5 centimeters; moderately decomposed plant material  
*E*—5 to 9 centimeters; paragravelly medial sandy loam  
*Bhs*—9 to 42 centimeters; paragravelly medial sandy loam

Bs1—42 to 57 centimeters; medial sandy loam  
Bs2—57 to 73 centimeters; medial loamy sand  
2Bw1—73 to 110 centimeters; gravelly medial sandy loam  
2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

### ***Owyhigh***

#### **Setting**

*Landform:* Glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 35 to 100 percent  
*Parent material:* Volcanic ash and colluvium over andesite  
*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Low (about 13.7 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA  
*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa*/*Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)  
*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest  
*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material  
Oe—1 to 6 centimeters; moderately decomposed plant material  
E—6 to 18 centimeters; medial sandy loam  
Bs1—18 to 34 centimeters; paragravelly medial sandy loam  
Bs2—34 to 52 centimeters; paragravelly medial sandy loam  
Bs3—52 to 80 centimeters; paragravelly medial sandy loam  
2R—80 to 150 centimeters; bedrock

### ***Dissimilar Minor Components***

#### **Ipsut soils**

*Composition:* 5 percent  
*Landform:* Glacial-valley walls

#### **Mysticlake soils**

*Composition:* 5 percent  
*Landform:* Swales of glacial-valley walls

#### **Rock outcrop**

*Composition:* 5 percent

**Williwakas soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

**9220—Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes**

***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1030 to 2020 meters

*Mean annual precipitation:* 1450 to 2920 millimeters

*Mean annual air temperature:* 2 to 7 degrees C

*Frost-free period:* 30 to 60 days

***Map Unit Composition***

*Tipsoo and similar soils:* 45 percent

*Owyhigh and similar soils:* 25 percent

*Mysticlake and similar soils:* 20 percent

*Dissimilar minor components:* 10 percent

***Tipsoo***

**Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 20 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

**Typical profile**

*Oi*—0 to 2 centimeters; slightly decomposed plant material

*Oe*—2 to 5 centimeters; moderately decomposed plant material

*E*—5 to 9 centimeters; paragravelly medial sandy loam

*Bhs*—9 to 42 centimeters; paragravelly medial sandy loam

Bs1—42 to 57 centimeters; medial sandy loam  
Bs2—57 to 73 centimeters; medial loamy sand  
2Bw1—73 to 110 centimeters; gravelly medial sandy loam  
2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

### ***Owyhigh***

#### **Setting**

*Landform:* Glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 65 percent  
*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock  
*Parent material:* Volcanic ash and colluvium over andesite  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Low (about 13.7 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA  
*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa*/*Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)  
*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest  
*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material  
Oe—1 to 6 centimeters; moderately decomposed plant material  
E—6 to 18 centimeters; medial sandy loam  
Bs1—18 to 34 centimeters; paragravelly medial sandy loam  
Bs2—34 to 52 centimeters; paragravelly medial sandy loam  
Bs3—52 to 80 centimeters; paragravelly medial sandy loam  
2R—80 to 150 centimeters; bedrock

### ***Mysticlake***

#### **Setting**

*Landform:* Swales of glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 55 percent  
*Parent material:* Volcanic ash over colluvium derived from andesite  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 26.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus* (mountain hemlock-Alaska cedar/Cascade azalea-dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 3 centimeters; moderately decomposed plant material

A1—3 to 6 centimeters; medial sandy loam

A2—6 to 20 centimeters; medial sandy loam

Bw—20 to 32 centimeters; paragravelly medial coarse sandy loam

Bg1—32 to 48 centimeters; medial fine sandy loam

Bg2—48 to 70 centimeters; medial sandy loam

Bg3—70 to 120 centimeters; medial fine sandy loam

2Bg4—120 to 150 centimeters; gravelly medial sandy loam

#### **Dissimilar Minor Components**

##### **Ipsut soils**

*Composition:* 5 percent

*Landform:* Glacial-valley walls

##### **Williwakas soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

### **9225—Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1030 to 1880 meters

*Mean annual precipitation:* 1805 to 2920 millimeters

*Mean annual air temperature:* 2 to 6 degrees C

*Frost-free period:* 30 to 60 days

#### **Map Unit Composition**

*Owyhigh and similar soils:* 40 percent

*Tipsoo and similar soils:* 25 percent

*Ipsut and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

## **Owyhigh**

### **Setting**

*Landform:* Bedrock benches on glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 15 to 65 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 13.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

### **Typical profile**

Oi—0 to 1 centimeter; slightly decomposed plant material

Oe—1 to 6 centimeters; moderately decomposed plant material

E—6 to 18 centimeters; medial sandy loam

Bs1—18 to 34 centimeters; paragravelly medial sandy loam

Bs2—34 to 52 centimeters; paragravelly medial sandy loam

Bs3—52 to 80 centimeters; paragravelly medial sandy loam

2R—80 to 150 centimeters; bedrock

## **Tipsoo**

### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 15 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 9 centimeters; paragravelly medial sandy loam

Bhs—9 to 42 centimeters; paragravelly medial sandy loam

Bs1—42 to 57 centimeters; medial sandy loam

Bs2—57 to 73 centimeters; medial loamy sand

2Bw1—73 to 110 centimeters; gravelly medial sandy loam

2Bw2—110 to 150 centimeters; gravelly medial fine sandy loam

#### **Ipsut**

#### **Setting**

*Landform:* Bedrock benches on glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 65 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 7.2 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

E—5 to 8 centimeters; medial loamy sand  
Bs1—8 to 18 centimeters; paragravelly medial sandy loam  
Bs2—18 to 30 centimeters; medial sandy loam  
Bs3—30 to 40 centimeters; medial sandy loam  
2R—40 to 150 centimeters; bedrock

#### ***Dissimilar Minor Components***

##### **Mysticlake soils**

*Composition:* 10 percent  
*Landform:* Swales of glacial-valley walls

##### **Unicornpeak soils**

*Composition:* 5 percent  
*Landform:* Glacial-valley walls

##### **Williwakas soils**

*Composition:* 5 percent  
*Landform:* Swales of glacial-valley walls

### **9250—Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes**

#### ***Map Unit Setting***

*General landscape:* Cascade Mountains  
*Elevation:* 1150 to 2010 meters  
*Mean annual precipitation:* 2110 to 3430 millimeters  
*Mean annual air temperature:* 2 to 6 degrees C  
*Frost-free period:* 30 to 60 days

#### ***Map Unit Composition***

*Burroughs, moist, and similar soils:* 45 percent  
*Littletahoma, moist, and similar soils:* 20 percent  
*Tatoosh, moist, and similar soils:* 20 percent  
*Dissimilar minor components:* 15 percent

#### ***Burroughs, Moist***

##### **Setting**

*Landform:* Ridges  
*Landform position (three-dimensional):* Mountaintops  
*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 15 to 100 percent  
*Parent material:* Volcanic ash and colluvium over andesite  
*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Low (about 13.7 centimeters)  
*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 16 centimeters; medial fine sandy loam

A2—16 to 50 centimeters; medial sandy loam

A3—50 to 68 centimeters; gravelly medial sandy loam

A4—68 to 80 centimeters; gravelly medial sandy loam

2R—80 to 150 centimeters; bedrock

***Littletahoma, Moist***

**Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.1 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

**Typical profile**

A1—0 to 12 centimeters; paragravelly medial sandy loam

A2—12 to 70 centimeters; paragravelly medial sandy loam

A3—70 to 90 centimeters; paragravelly medial sandy loam

Bw1—90 to 110 centimeters; paragravelly medial fine sandy loam

2Bw2—110 to 150 centimeters; gravelly medial sandy loam

***Tatoosh, Moist***

**Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 6 centimeters; paragravelly medial sandy loam

A2—6 to 22 centimeters; paragravelly medial sandy loam

Bw—22 to 46 centimeters; paragravelly medial sandy loam

2R—46 to 150 centimeters; bedrock

#### **Dissimilar Minor Components**

##### **Mountwow soils, moist**

*Composition:* 10 percent

*Landform:* Swales of ridges

##### **Rock outcrop**

*Composition:* 5 percent

### **9251—Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1160 to 2120 meters

*Mean annual precipitation:* 2005 to 3430 millimeters

*Mean annual air temperature:* 1 to 6 degrees C

*Frost-free period:* 30 to 60 days

#### **Map Unit Composition**

*Sarvant, moist, and similar soils:* 45 percent

*Chenuis, moist, and similar soils:* 25 percent

*Tatoosh, moist, and similar soils:* 20 percent

*Dissimilar minor components:* 10 percent

#### **Sarvant, Moist**

##### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 20 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.9 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 9 centimeters; gravelly medial sandy loam

A2—9 to 36 centimeters; very gravelly medial sandy loam

Bw—36 to 65 centimeters; very gravelly medial sandy loam

2R—65 to 150 centimeters; bedrock

### ***Chenius, Moist***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 100 percent

*Parent material:* Volcanic ash and colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 10.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

#### **Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

A1—3 to 15 centimeters; gravelly medial coarse sandy loam

A2—15 to 30 centimeters; very gravelly medial sandy loam

Bw1—30 to 65 centimeters; extremely cobbly medial sandy loam

Bw2—65 to 150 centimeters; extremely cobbly medial sandy loam

### ***Tatoosh, Moist***

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 20 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

**Typical profile**

A1—0 to 6 centimeters; paragrade gravelly medial sandy loam

A2—6 to 22 centimeters; paragrade gravelly medial sandy loam

Bw—22 to 46 centimeters; paragrade gravelly medial sandy loam

2R—46 to 150 centimeters; bedrock

***Dissimilar Minor Components***

**Rock outcrop**

*Composition:* 5 percent

**Rubbleland, talus**

*Composition:* 5 percent

*Landform:* Talus slopes

**9252—*Littletahoma-Burroughs-Mountwow, moist complex, 20 to 100 percent slopes***

***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1320 to 1990 meters

*Mean annual precipitation:* 2160 to 3175 millimeters

*Mean annual air temperature:* 2 to 5 degrees C

*Frost-free period:* 30 to 60 days

***Map Unit Composition***

*Littletahoma, moist, and similar soils:* 40 percent

*Burroughs, moist, and similar soils:* 25 percent

*Mountwow, moist, and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

***Littletahoma, Moist***

**Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.1 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

**Typical profile**

A1—0 to 12 centimeters; paragravelly medial sandy loam

A2—12 to 70 centimeters; paragravelly medial sandy loam

A3—70 to 90 centimeters; paragravelly medial sandy loam

Bw1—90 to 110 centimeters; paragravelly medial fine sandy loam

2Bw2—110 to 150 centimeters; gravelly medial sandy loam

***Burroughs, Moist***

**Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 13.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 16 centimeters; medial fine sandy loam

A2—16 to 50 centimeters; medial sandy loam

A3—50 to 68 centimeters; gravelly medial sandy loam

A4—68 to 80 centimeters; gravelly medial sandy loam

2R—80 to 150 centimeters; bedrock

### ***Mountwow, Moist***

#### **Setting**

*Landform:* Swales of glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 20 to 50 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam

2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### ***Dissimilar Minor Components***

#### **Tatoosh soils, moist**

*Composition:* 10 percent

*Landform:* Glacial-valley walls

#### **Rock outcrop**

*Composition:* 5 percent

#### **Unicornpeak soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

## **9253—Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1330 to 1960 meters

*Mean annual precipitation:* 2160 to 3175 millimeters

*Mean annual air temperature:* 2 to 5 degrees C

*Frost-free period:* 30 to 60 days

### **Map Unit Composition**

*Mountwow, moist, and similar soils:* 40 percent

*Littletahoma, moist, and similar soils:* 30 percent

*Unicornpeak and similar soils:* 15 percent

*Dissimilar minor components:* 15 percent

### **Mountwow, Moist**

#### **Setting**

*Landform:* Swales of glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 50 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### ***Littletahoma, Moist***

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.1 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 12 centimeters; paragravelly medial sandy loam

A2—12 to 70 centimeters; paragravelly medial sandy loam

A3—70 to 90 centimeters; paragravelly medial sandy loam

Bw1—90 to 110 centimeters; paragravelly medial fine sandy loam

2Bw2—110 to 150 centimeters; gravelly medial sandy loam

### ***Unicornpeak***

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Moderately well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 30 to 75 centimeters (see Water Features table)

*Salinity (maximum):* About 1 millimho per centimeter

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile): High (about 24.8 centimeters)*

*Land capability subclass (nonirrigated): 7e*

#### **Vegetation**

*Ecological site ID: F003XN951WA*

*Ecological site scientific name: *Tsuga mertensiana*-*Abies lasiocarpa*/*Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)*

*Ecological site common name: Southern Washington Cascades High Cryic Coniferous Forest*

*Common trees: Alaska yellow-cedar, Engelmann spruce, mountain hemlock, Pacific silver fir, subalpine fir*

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 6 centimeters; moderately decomposed plant material

E—6 to 12 centimeters; medial sandy loam

Bs1—12 to 32 centimeters; medial sandy loam

Bs2—32 to 58 centimeters; medial coarse sandy loam

Bg1—58 to 72 centimeters; medial fine sandy loam

Bg2—72 to 88 centimeters; medial fine sandy loam

2Bg3—88 to 150 centimeters; gravelly medial fine sandy loam

#### **Dissimilar Minor Components**

##### **Burroughs soils, moist**

*Composition: 10 percent*

*Landform: Glacial-valley walls*

##### **Williwakas soils**

*Composition: 5 percent*

*Landform: Swales of glacial-valley walls*

## **9254—Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes**

#### **Map Unit Setting**

*General landscape: Cascade Mountains*

*Elevation: 1340 to 1960 meters*

*Mean annual precipitation: 2160 to 2515 millimeters*

*Mean annual air temperature: 2 to 5 degrees C*

*Frost-free period: 30 to 60 days*

#### **Map Unit Composition**

*Chenuis, moist, and similar soils: 40 percent*

*Sarvant, moist, and similar soils: 25 percent*

*Mountwow, moist, and similar soils: 15 percent*

*Dissimilar minor components: 20 percent*

#### **Chenuis, Moist**

##### **Setting**

*Landform: Glacial-valley walls*

*Landform position (three-dimensional): Mountainflanks*

*Aspect (range): All aspects*

**Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Volcanic ash and colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 10.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

**Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

A1—3 to 15 centimeters; gravelly medial coarse sandy loam

A2—15 to 30 centimeters; very gravelly medial sandy loam

Bw1—30 to 65 centimeters; extremely cobbly medial sandy loam

Bw2—65 to 150 centimeters; extremely cobbly medial sandy loam

***Sarvant, Moist***

**Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.9 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN541WA

*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland

*Common trees:* None

**Typical profile**

A1—0 to 9 centimeters; gravelly medial sandy loam

A2—9 to 36 centimeters; very gravelly medial sandy loam

Bw—36 to 65 centimeters; very gravelly medial sandy loam  
2R—65 to 150 centimeters; bedrock

### ***Mountwow, Moist***

#### **Setting**

*Landform:* Swales of glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 50 percent  
*Parent material:* Volcanic ash over colluvium  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 19 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN541WA  
*Ecological site name:* Southern Washington Cascades Moist Subalpine Parkland  
*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
A—2 to 10 centimeters; medial sandy loam  
Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam  
Bw2—14 to 26 centimeters; medial fine sandy loam  
Bw3—26 to 37 centimeters; medial loamy sand  
Agb1—37 to 44 centimeters; medial sandy loam  
Bgb1—44 to 51 centimeters; paragravelly medial sandy loam  
Bgb2—51 to 60 centimeters; medial coarse sandy loam  
Bgb3—60 to 66 centimeters; medial fine sandy loam  
2Agb2—66 to 85 centimeters; medial sandy loam  
2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### ***Dissimilar Minor Components***

#### **Unicornpeak soils**

*Composition:* 10 percent  
*Landform:* Glacial-valley walls

#### **Tatoosh soils, moist**

*Composition:* 5 percent  
*Landform:* Glacial-valley walls

#### **Williwakas soils**

*Composition:* 5 percent  
*Landform:* Swales of glacial-valley walls

## **9255—Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes**

### ***Map Unit Setting***

*General landscape:* Cascade Mountains ([fig. 58](#))

*Elevation:* 1190 to 2120 meters

*Mean annual precipitation:* 1550 to 2820 millimeters

*Mean annual air temperature:* 2 to 5 degrees C

*Frost-free period:* 30 to 60 days

### ***Map Unit Composition***

*Burroughs and similar soils:* 50 percent

*Littletahoma and similar soils:* 20 percent

*Tatoosh and similar soils:* 15 percent

*Dissimilar minor components:* 15 percent

### ***Burroughs***

#### ***Setting***

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### ***Properties and qualities***

*Slope:* 30 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 13.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### ***Vegetation***

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

#### ***Typical profile***

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 16 centimeters; medial fine sandy loam

A2—16 to 50 centimeters; medial sandy loam

A3—50 to 68 centimeters; gravelly medial sandy loam

A4—68 to 80 centimeters; gravelly medial sandy loam

2R—80 to 150 centimeters; bedrock

### ***Littletahoma***

#### ***Setting***

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects



Figure 58.—Mountain goats (*Oreamnos americanus*) near Chinook Pass traversing an area of Littletahoma soil in detailed soil map unit 9255—Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes. The rangeland ecological site is Southern Washington Cascades Subalpine Parkland (R003XN542WA).

#### Properties and qualities

*Slope:* 30 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* High (about 23.1 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 12 centimeters; paragravelly medial sandy loam  
A2—12 to 70 centimeters; paragravelly medial sandy loam  
A3—70 to 90 centimeters; paragravelly medial sandy loam  
Bw1—90 to 110 centimeters; paragravelly medial fine sandy loam  
2Bw2—110 to 150 centimeters; gravelly medial sandy loam

### **Tatoosh**

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 25 to 50 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 6 centimeters; paragravelly medial sandy loam  
A2—6 to 22 centimeters; paragravelly medial sandy loam  
Bw—22 to 46 centimeters; paragravelly medial sandy loam  
2R—46 to 150 centimeters; bedrock

### **Dissimilar Minor Components**

#### **Mountwow soils**

*Composition:* 10 percent

*Landform:* Swales of ridges

#### **Rock outcrop**

*Composition:* 5 percent

## 9256—Chenius-Sarvant complex, 25 to 100 percent slopes

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1110 to 2260 meters

*Mean annual precipitation:* 1550 to 2920 millimeters

*Mean annual air temperature:* 1 to 6 degrees C

*Frost-free period:* 30 to 60 days

### **Map Unit Composition**

*Chenius and similar soils:* 50 percent

*Sarvant and similar soils:* 30 percent

*Dissimilar minor components:* 20 percent

### **Chenius**

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash and colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 10.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

#### **Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

A1—3 to 15 centimeters; gravelly medial coarse sandy loam

A2—15 to 30 centimeters; very gravelly medial sandy loam

Bw1—30 to 65 centimeters; extremely cobbly medial sandy loam

Bw2—65 to 150 centimeters; extremely cobbly medial sandy loam

### **Sarvant**

#### **Setting**

*Landform:* Ridges

*Landform position (three-dimensional):* Mountaintops

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock  
*Drainage class:* Well drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* More than 200 centimeters  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Very low (about 6.9 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA  
*Ecological site name:* Southern Washington Cascades Subalpine Parkland  
*Common trees:* None

#### **Typical profile**

A1—0 to 9 centimeters; gravelly medial sandy loam  
A2—9 to 36 centimeters; very gravelly medial sandy loam  
Bw—36 to 65 centimeters; very gravelly medial sandy loam  
2R—65 to 150 centimeters; bedrock

#### ***Dissimilar Minor Components***

##### **Tatoosh soils**

*Composition:* 10 percent  
*Landform:* Ridges

##### **Rock outcrop**

*Composition:* 5 percent

##### **Rubbleland, talus**

*Composition:* 5 percent  
*Landform:* Talus slopes

### **9257—Littletahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes**

#### ***Map Unit Setting***

*General landscape:* Cascade Mountains  
*Elevation:* 1370 to 2080 meters  
*Mean annual precipitation:* 1755 to 2920 millimeters  
*Mean annual air temperature:* 1 to 5 degrees C  
*Frost-free period:* 30 to 60 days

#### ***Map Unit Composition***

*Littletahoma and similar soils:* 50 percent  
*Burroughs and similar soils:* 20 percent  
*Mountwow and similar soils:* 15 percent  
*Dissimilar minor components:* 15 percent

#### ***Littletahoma***

##### **Setting**

*Landform:* Glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.1 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

**Typical profile**

A1—0 to 12 centimeters; paragravelly medial sandy loam

A2—12 to 70 centimeters; paragravelly medial sandy loam

A3—70 to 90 centimeters; paragravelly medial sandy loam

Bw1—90 to 110 centimeters; paragravelly medial fine sandy loam

2Bw2—110 to 150 centimeters; gravelly medial sandy loam

***Burroughs***

**Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 25 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 13.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

**Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 16 centimeters; medial fine sandy loam

A2—16 to 50 centimeters; medial sandy loam  
A3—50 to 68 centimeters; gravelly medial sandy loam  
A4—68 to 80 centimeters; gravelly medial sandy loam  
2R—80 to 150 centimeters; bedrock

### ***Mountwow***

#### **Setting**

*Landform:* Swales of glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 50 percent  
*Parent material:* Volcanic ash over colluvium  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 19 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA  
*Ecological site name:* Southern Washington Cascades Subalpine Parkland  
*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
A—2 to 10 centimeters; medial sandy loam  
Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam  
Bw2—14 to 26 centimeters; medial fine sandy loam  
Bw3—26 to 37 centimeters; medial loamy sand  
Agb1—37 to 44 centimeters; medial sandy loam  
Bgb1—44 to 51 centimeters; paragravelly medial sandy loam  
Bgb2—51 to 60 centimeters; medial coarse sandy loam  
Bgb3—60 to 66 centimeters; medial fine sandy loam  
2Agb2—66 to 85 centimeters; medial sandy loam  
2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### ***Dissimilar Minor Components***

#### **Tatoosh soils**

*Composition:* 10 percent  
*Landform:* Glacial-valley walls

#### **Rock outcrop**

*Composition:* 5 percent

## **9258—Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes**

### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1400 to 2030 meters

*Mean annual precipitation:* 1700 to 2920 millimeters

*Mean annual air temperature:* 1 to 5 degrees C

*Frost-free period:* 30 to 60 days

### ***Map Unit Composition***

*Mountwow and similar soils:* 35 percent

*Littletahoma and similar soils:* 25 percent

*Wahpenayo and similar soils:* 15 percent

*Dissimilar minor components:* 25 percent

### ***Mountwow***

#### **Setting**

*Landform:* Swales of glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 50 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam  
2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### *Littletahoma*

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 55 percent

*Parent material:* Volcanic ash over colluvium derived from andesite

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* High (about 23.1 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 12 centimeters; paragravelly medial sandy loam

A2—12 to 70 centimeters; paragravelly medial sandy loam

A3—70 to 90 centimeters; paragravelly medial sandy loam

Bw1—90 to 110 centimeters; paragravelly medial fine sandy loam

2Bw2—110 to 150 centimeters; gravelly medial sandy loam

### *Wahpenayo*

#### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 55 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 50 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 16.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

#### **Typical profile**

A1—0 to 16 centimeters; paragravelly medial sandy loam

A2—16 to 45 centimeters; paragravelly medial sandy loam

Bg1—45 to 52 centimeters; medial fine sandy loam

Bg2—52 to 64 centimeters; medial loam

Bg3—64 to 75 centimeters; medial coarse sandy loam

Bg4—75 to 90 centimeters; medial fine sandy loam

2R—90 to 150 centimeters; bedrock

#### **Dissimilar Minor Components**

##### **Burroughs soils**

*Composition:* 10 percent

*Landform:* Glacial-valley walls

##### **Unicornpeak soils**

*Composition:* 10 percent

*Landform:* Glacial-valley walls

##### **Williwakas soils**

*Composition:* 5 percent

*Landform:* Swales of glacial-valley walls

## **9259—Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1450 to 2140 meters

*Mean annual precipitation:* 1755 to 2870 millimeters

*Mean annual air temperature:* 2 to 5 degrees C

*Frost-free period:* 30 to 60 days

#### **Map Unit Composition**

*Chenuis and similar soils:* 40 percent

*Sarvant and similar soils:* 25 percent

*Mountwow and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

#### **Chenuis**

##### **Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 65 percent

*Parent material:* Volcanic ash and colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 10.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

**Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

A1—3 to 15 centimeters; gravelly medial coarse sandy loam

A2—15 to 30 centimeters; very gravelly medial sandy loam

Bw1—30 to 65 centimeters; extremely cobbly medial sandy loam

Bw2—65 to 150 centimeters; extremely cobbly medial sandy loam

**Sarvant**

**Setting**

*Landform:* Glacial-valley walls

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 15 to 65 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.9 centimeters)

*Land capability subclass (nonirrigated):* 7e

**Vegetation**

*Ecological site ID:* R003XN542WA

*Ecological site name:* Southern Washington Cascades Subalpine Parkland

*Common trees:* None

**Typical profile**

A1—0 to 9 centimeters; gravelly medial sandy loam

A2—9 to 36 centimeters; very gravelly medial sandy loam

Bw—36 to 65 centimeters; very gravelly medial sandy loam  
2R—65 to 150 centimeters; bedrock

### ***Mountwow***

#### **Setting**

*Landform:* Swales of glacial-valley walls  
*Landform position (three-dimensional):* Mountainflanks  
*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 50 percent  
*Parent material:* Volcanic ash over colluvium  
*Depth to restrictive feature:* None within a depth of 150 centimeters  
*Drainage class:* Somewhat poorly drained  
*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)  
*Flooding frequency:* None  
*Ponding frequency:* None  
*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)  
*Salinity (maximum):* Not saline  
*Sodicity (maximum):* Not sodic  
*Available water capacity (entire profile):* Moderate (about 19 centimeters)  
*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN542WA  
*Ecological site name:* Southern Washington Cascades Subalpine Parkland  
*Common trees:* Alaska yellow-cedar, mountain hemlock, subalpine fir

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material  
A—2 to 10 centimeters; medial sandy loam  
Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam  
Bw2—14 to 26 centimeters; medial fine sandy loam  
Bw3—26 to 37 centimeters; medial loamy sand  
Agb1—37 to 44 centimeters; medial sandy loam  
Bgb1—44 to 51 centimeters; paragravelly medial sandy loam  
Bgb2—51 to 60 centimeters; medial coarse sandy loam  
Bgb3—60 to 66 centimeters; medial fine sandy loam  
2Agb2—66 to 85 centimeters; medial sandy loam  
2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### ***Dissimilar Minor Components***

#### **Unicornpeak soils**

*Composition:* 10 percent  
*Landform:* Glacial-valley walls

#### **Tatoosh soils**

*Composition:* 5 percent  
*Landform:* Glacial-valley walls

#### **Williwakas soils**

*Composition:* 5 percent  
*Landform:* Swales of glacial-valley walls

## **9260—Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes**

### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1400 to 2280 meters

*Mean annual precipitation:* 2310 to 3935 millimeters

*Mean annual air temperature:* 1 to 4 degrees C

*Frost-free period:* 5 to 45 days

### **Map Unit Composition**

*Mountwow, alpine, and similar soils:* 45 percent

*Chenuis, alpine, and similar soils:* 20 percent

*Meany and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

### **Mountwow, Alpine**

#### **Setting**

*Landform:* Swales of cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 50 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN543WA

*Ecological site name:* Southern Washington Cascades Alpine Tundra

*Common trees:* None

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

### ***Chenius, Alpine***

#### **Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 50 percent

*Parent material:* Volcanic ash and colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 10.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN543WA

*Ecological site name:* Southern Washington Cascades Alpine Tundra

*Common trees:* None

#### **Typical profile**

Oi—0 to 3 centimeters; slightly decomposed plant material

A1—3 to 15 centimeters; gravelly medial coarse sandy loam

A2—15 to 30 centimeters; very gravelly medial sandy loam

Bw1—30 to 65 centimeters; extremely cobbly medial sandy loam

Bw2—65 to 150 centimeters; extremely cobbly medial sandy loam

### ***Meany***

#### **Setting**

*Landform:* Swales of cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 5 to 25 percent

*Parent material:* Mixed volcanic ash and glacial till

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* Rare (see Water Features table)

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* At the soil surface to a depth of 5 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.8 centimeters)

*Land capability subclass (nonirrigated):* 7s

**Vegetation**

*Ecological site ID:* R003XN544WA

*Ecological site name:* Southern Washington Cascades Wet Alpine Tundra

*Common trees:* None

**Typical profile**

A—0 to 21 centimeters; extremely cobbly medial coarse sandy loam

Bg1—21 to 72 centimeters; extremely gravelly medial coarse sandy loam

Bg2—72 to 104 centimeters; extremely cobbly medial coarse sandy loam

Bg3—104 to 150 centimeters; extremely cobbly medial coarse sandy loam

***Dissimilar Minor Components***

**Riverwash**

*Composition:* 10 percent

*Landform:* Flood plains

**Wahpenayo soils, alpine**

*Composition:* 10 percent

*Landform:* Cirques

**9261—Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes**

***Map Unit Setting***

*General landscape:* Cascade Mountains ([fig. 59](#))

*Elevation:* 1700 to 2390 meters

*Mean annual precipitation:* 2260 to 3685 millimeters

*Mean annual air temperature:* 1 to 3 degrees C

*Frost-free period:* 5 to 45 days

***Map Unit Composition***

*Wahpenayo, alpine, and similar soils:* 45 percent

*Burroughs, alpine, and similar soils:* 20 percent

*Mountwow, alpine, and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

***Wahpenayo, Alpine***

**Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

**Properties and qualities**

*Slope:* 5 to 55 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 50 centimeters (see Water Features table)

*Salinity (maximum):* Not saline



Figure 59.—View from Burroughs Mountain looking northwest over Berkeley Park. Area shows transition from high cryic coniferous forest (detailed soil map unit 9225—Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes), to high cryic subalpine forest and rangeland (units 8257—Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes and 9257—Littlelahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes) to an alpine setting in foreground (units 9261—Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes, and 9262—Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes).

*Sodicity (maximum): Not sodic*

*Available water capacity (entire profile): Moderate (about 16.4 centimeters)*

*Land capability subclass (nonirrigated): 7e*

#### **Vegetation**

*Ecological site ID: R003XN543WA*

*Ecological site name: Southern Washington Cascades Alpine Tundra*

*Common trees: None*

#### **Typical profile**

A1—0 to 16 centimeters; paragravelly medial sandy loam

A2—16 to 45 centimeters; paragravelly medial sandy loam

Bg1—45 to 52 centimeters; medial fine sandy loam

Bg2—52 to 64 centimeters; medial loam

Bg3—64 to 75 centimeters; medial coarse sandy loam

Bg4—75 to 90 centimeters; medial fine sandy loam

2R—90 to 150 centimeters; bedrock

### ***Burroughs, Alpine***

#### **Setting**

*Landform: Cirques*

*Landform position (three-dimensional): Mountainflanks*

*Aspect (range): All aspects*

### **Properties and qualities**

*Slope:* 5 to 55 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 13.7 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* R003XN543WA

*Ecological site name:* Southern Washington Cascades Alpine Tundra

*Common trees:* None

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A1—2 to 16 centimeters; medial fine sandy loam

A2—16 to 50 centimeters; medial sandy loam

A3—50 to 68 centimeters; gravelly medial sandy loam

A4—68 to 80 centimeters; gravelly medial sandy loam

2R—80 to 150 centimeters; bedrock

## ***Mountnow, Alpine***

### **Setting**

*Landform:* Swales of cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 5 to 50 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* R003XN543WA

*Ecological site name:* Southern Washington Cascades Alpine Tundra

*Common trees:* None

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam  
Bw3—26 to 37 centimeters; medial loamy sand  
Agb1—37 to 44 centimeters; medial sandy loam  
Bgb1—44 to 51 centimeters; paragravelly medial sandy loam  
Bgb2—51 to 60 centimeters; medial coarse sandy loam  
Bgb3—60 to 66 centimeters; medial fine sandy loam  
2Agb2—66 to 85 centimeters; medial sandy loam  
2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam  
2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

#### ***Dissimilar Minor Components***

##### **Chenuis soils, alpine**

*Composition:* 10 percent

*Landform:* Cirques

##### **Meany soils**

*Composition:* 10 percent

*Landform:* Swales of cirques

### **9262—Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes**

#### ***Map Unit Setting***

*General landscape:* Cascade Mountains

*Elevation:* 1580 to 2340 meters

*Mean annual precipitation:* 2210 to 3935 millimeters

*Mean annual air temperature:* -1 to 4 degrees C

*Frost-free period:* 5 to 45 days

#### ***Map Unit Composition***

*Sarvant, alpine, and similar soils:* 40 percent

*Wahpenayo, alpine, and similar soils:* 25 percent

*Mountwow, alpine, and similar soils:* 15 percent

*Dissimilar minor components:* 20 percent

#### ***Sarvant, Alpine***

##### **Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

##### **Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 6.9 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* R003XN543WA

*Ecological site name:* Southern Washington Cascades Alpine Tundra

*Common trees:* None

### **Typical profile**

A1—0 to 9 centimeters; gravelly medial sandy loam

A2—9 to 36 centimeters; very gravelly medial sandy loam

Bw—36 to 65 centimeters; very gravelly medial sandy loam

2R—65 to 150 centimeters; bedrock

## ***Wahpenayo, Alpine***

### **Setting**

*Landform:* Cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 15 to 50 percent

*Parent material:* Volcanic ash and colluvium over andesite

*Depth to restrictive feature:* 50 to 100 centimeters to lithic bedrock

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 50 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 16.4 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* R003XN543WA

*Ecological site name:* Southern Washington Cascades Alpine Tundra

*Common trees:* None

### **Typical profile**

A1—0 to 16 centimeters; paragravelly medial sandy loam

A2—16 to 45 centimeters; paragravelly medial sandy loam

Bg1—45 to 52 centimeters; medial fine sandy loam

Bg2—52 to 64 centimeters; medial loam

Bg3—64 to 75 centimeters; medial coarse sandy loam

Bg4—75 to 90 centimeters; medial fine sandy loam

2R—90 to 150 centimeters; bedrock

## ***Mountwow, Alpine***

### **Setting**

*Landform:* Swales of cirques

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

### **Properties and qualities**

*Slope:* 15 to 50 percent

*Parent material:* Volcanic ash over colluvium

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Moderate (about 19 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN543WA

*Ecological site name:* Southern Washington Cascades Alpine Tundra

*Common trees:* None

#### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

A—2 to 10 centimeters; medial sandy loam

Bw1—10 to 14 centimeters; paragravelly medial coarse sandy loam

Bw2—14 to 26 centimeters; medial fine sandy loam

Bw3—26 to 37 centimeters; medial loamy sand

Agb1—37 to 44 centimeters; medial sandy loam

Bgb1—44 to 51 centimeters; paragravelly medial sandy loam

Bgb2—51 to 60 centimeters; medial coarse sandy loam

Bgb3—60 to 66 centimeters; medial fine sandy loam

2Agb2—66 to 85 centimeters; medial sandy loam

2Bgb4—85 to 120 centimeters; very gravelly medial sandy loam

2Bgb5—120 to 150 centimeters; very gravelly medial sandy loam

#### **Dissimilar Minor Components**

##### **Chenius soils, alpine**

*Composition:* 10 percent

*Landform:* Cirques

##### **Rock outcrop**

*Composition:* 5 percent

##### **Tatoosh soils, alpine**

*Composition:* 5 percent

*Landform:* Cirques

## **9263—Tamanos-Glaciers complex, 10 to 65 percent slopes**

#### **Map Unit Setting**

*General landscape:* Cascade Mountains

*Elevation:* 1080 to 2200 meters

*Mean annual precipitation:* 2300 to 3600 millimeters

*Mean annual air temperature:* 0 to 5 degrees C

*Frost-free period:* 5 to 45 days

#### **Map Unit Composition**

*Tamanos and similar soils:* 80 percent

*Glaciers:* 20 percent

### ***Tamanos***

#### **Setting**

*Landform:* Alpine glaciers

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 10 to 65 percent

*Parent material:* Colluvium over massive ice

*Depth to restrictive feature:* 50 to 75 centimeters to permafrost

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* Very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Very low (about 2 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* R003XN545WA

*Ecological site name:* Southern Washington Cascades Debris Covered Glaciers

*Common trees:* None

#### **Typical profile**

A—0 to 20 centimeters; gravelly ashy loamy sand

C—20 to 50 centimeters; very gravelly ashy loamy sand

2Wf—50 to 150 centimeters; permanently frozen water

### ***Glaciers***

*Landform:* Volcanic cone, alpine glaciers

*Aspect (range):* All aspects

*Slope:* 10 to 65 percent

*Land capability subclass (nonirrigated):* 8

## **9993—Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes**

#### ***Map Unit Setting***

*Elevation:* 1075 to 1865 meters

*Mean annual precipitation:* 1805 to 3685 millimeters

*Mean annual air temperature:* -1 to 6 degrees C

*Frost-free period:* 5 to 45 days

#### ***Map Unit Composition***

*Rubbleland, talus:* 50 percent

*Rock outcrop:* 35 percent

*Dissimilar minor components:* 15 percent

### ***Rubbleland, Talus***

#### **Setting**

*Landform:* Talus slopes

**Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Talus

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* Unspecified (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Unspecified

*Land capability subclass (nonirrigated):* 8

**Vegetation**

*Common trees:* None

***Rock Outcrop***

*Slope:* 15 to 100 percent

*Land capability subclass (nonirrigated):* 8

***Dissimilar Minor Components***

**Sluiskin soils**

*Composition:* 10 percent

*Landform:* Talus slopes

**Summerland soils, cold**

*Composition:* 5 percent

*Landform:* Talus slopes

**9994—Rubbleland, till-Glacierisland-Wonderland complex, 15 to 100 percent slopes**

***Map Unit Setting***

*Elevation:* 1260 to 2420 meters

*Mean annual precipitation:* 2415 to 3935 millimeters

*Mean annual air temperature:* -1 to 4 degrees C

*Frost-free period:* 5 to 45 days

***Map Unit Composition***

*Rubbleland, till:* 50 percent

*Glacierisland and similar soils:* 25 percent

*Wonderland and similar soils:* 15 percent

*Dissimilar minor component:* 10 percent

***Rubbleland, Till***

*Parent material:* Till

*Slope:* 15 to 100 percent

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat excessively drained

*Capacity to transmit water (Ksat):* Unspecified (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Unspecified

*Land capability subclass (nonirrigated):* 8

### ***Glacierisland***

#### **Setting**

*Landform:* Moraines

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 100 percent

*Parent material:* Till and lahar deposits

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Well drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* More than 200 centimeters

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 12 centimeters)

*Land capability subclass (nonirrigated):* 7e

#### **Vegetation**

*Ecological site ID:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa*/*Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Common trees:* Sitka alder, subalpine fir, Engelmann spruce, mountain hemlock, Alaska yellow-cedar

#### **Typical profile**

Oi—0 to 4 centimeters; slightly decomposed plant material

Oe—4 to 14 centimeters; moderately decomposed plant material

A—14 to 46 centimeters; very gravelly ashy sandy loam

Bw1—46 to 94 centimeters; very cobbly ashy sandy loam

Bw2—94 to 150 centimeters; extremely gravelly ashy sandy loam

### ***Wonderland***

#### **Setting**

*Landform:* Moraines

*Landform position (three-dimensional):* Mountainflanks

*Aspect (range):* All aspects

#### **Properties and qualities**

*Slope:* 15 to 50 percent

*Parent material:* Till and lahar deposits

*Depth to restrictive feature:* None within a depth of 150 centimeters

*Drainage class:* Somewhat poorly drained

*Capacity to transmit water (Ksat):* High or very high (see Physical Properties table)

*Flooding frequency:* None

*Ponding frequency:* None

*Seasonal high water table (minimum depth):* About 15 to 40 centimeters (see Water Features table)

*Salinity (maximum):* Not saline

*Sodicity (maximum):* Not sodic

*Available water capacity (entire profile):* Low (about 10.6 centimeters)

*Land capability subclass (nonirrigated):* 7e

### **Vegetation**

*Ecological site ID:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus* (mountain hemlock-Alaska cedar/Cascade azalea-dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic Coniferous Forest

*Common trees:* Sitka alder, subalpine fir, Engelmann spruce, mountain hemlock, Alaska yellow-cedar

### **Typical profile**

Oi—0 to 2 centimeters; slightly decomposed plant material

Oe—2 to 5 centimeters; moderately decomposed plant material

A—5 to 15 centimeters; very gravelly ashy fine sandy loam

Bw—15 to 35 centimeters; very gravelly ashy sandy loam

Bg1—35 to 60 centimeters; very gravelly ashy sandy loam

Bg2—60 to 100 centimeters; very gravelly ashy fine sandy loam

Bg3—100 to 150 centimeters; extremely gravelly ashy fine sandy loam

### **Dissimilar Minor Component**

#### **Sheepskull soils**

*Composition:* 10 percent

*Landform:* Moraines

## **9996—Glaciers-Rock outcrop complex, 15 to 100 percent slopes**

### **Map Unit Setting**

*Elevation:* 1450 to 4392 meters

*Mean annual precipitation:* 2515 to 4700 millimeters

*Mean annual air temperature:* -8 to 4 degrees C

*Frost-free period:* 0 to 45 days

### **Map Unit Composition**

*Glaciers:* 45 percent

*Rock outcrop:* 45 percent

*Dissimilar minor components:* 10 percent

### **Glaciers**

*Landform:* Volcanic cone, alpine glaciers

*Aspect (range):* All aspects

*Slope:* 15 to 100 percent

*Land capability subclass (nonirrigated):* 8

### **Rock Outcrop**

*Landform:* Volcanic cones, ridges

*Aspect (range):* All aspects

*Slope:* 35 to 100 percent

*Land capability subclass (nonirrigated):* 8

***Dissimilar Minor Component***

**Tatoosh soils, volcanic cone**

*Composition:* 10 percent

*Elevation:* 1450 to 3350 meters

*Landform:* Volcanic cones, ridges

**W—Water**

*Elevation:* 980 to 2060 meters

*Mean annual precipitation:* 1550 to 2920 millimeters

*Mean annual air temperature:* 2 to 7 degrees C

*Map unit composition:* Water—100 percent

*Land capability subclass (nonirrigated):* 8



# Use and Management of the Soils

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This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils as rangeland and forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Land managers and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, researchers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, and campgrounds and for ecological rehabilitation and research.

## Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are expressed as both a limitation or suitability class and a numerical rating.

## Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited*, *somewhat limited*, and *very limited*. The suitability ratings are expressed as *well suited*, *moderately suited*, *poorly suited*, and *unsuited* or as *good*, *fair*, and *poor*.

## Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

## Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961). Only class and subclass are used in this survey.

*Capability classes*, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

*Capability subclasses* are soil groups within one class. They are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, 2e. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by w, s, or c because the

soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The capability classification of the soils in this survey area is given in the section "Detailed Soil Map Units" and in [table 6](#).

## Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the amount of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

None of the soils in the survey area meet the requirements for prime farmland.

## Hydric Soils

[Table 7](#) lists the map unit components in the survey area that are rated as hydric soils. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils at a specific site (National Research Council, 1995; USDA, 2010).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria

are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2014) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (USDA, 2010).

Hydric soils are identified by examining and describing the soil to a depth of about 50 centimeters. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by numbers in the table. The numbers indicate which of the following criteria were used to rate the soil as hydric. In some instances, a soil may satisfy more than one criteria; thus, more than one number is given in the table. Definitions for the numbers are as follows:

1. All Histels except Folistels and Histosols except Folists; or
2. Map unit components in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, or Andic, Cumulic, Pachic, or Vitrandic subgroups that:
  - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
  - b. Show evidence that the soil meets the definition of a hydric soil;
3. Map unit components that are frequently ponded for long duration or very long duration during the growing season that:
  - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
  - b. Show evidence that the soil meets the definition of a hydric soil; or
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
  - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
  - b. Show evidence that the soils meet the definition of a hydric soil.

## Vegetation

Characteristics of the vegetation in Mount Rainier National Park are described in this section. Each soil component is assigned an ecological site number and name corresponding to a forestland or rangeland site. Landscapes are divided into ecological sites for the purposes of inventory, evaluation, and management. An ecological site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation.

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forestland understory vegetation are closely related to the kind of soil. Effective management is based on the relationship among the soils, vegetation, and water.

An ecological site is the product of all the environmental factors responsible for its development and it has a set of key characteristics that are included in the ecological site description. Ecological sites have characteristic soils that have developed over time. The factors of soil development are parent material; climate; living organisms; topography, or landscape position; and time. An ecological site has a characteristic hydrology, particularly infiltration and runoff, that has developed over time. The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others, and each influences the development of the others. An ecological site also has a characteristic plant community (kind and amount of vegetation). The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total biomass.

The process of plant community development is known as succession. Succession occurs over time and is the result of climate, soil properties, plant growth, and natural disturbances. Plant succession is defined as the gradual or rapid orderly process of replacement of plant communities on an ecological site following disturbance. When a natural or manmade disturbance occurs, the successional pathway is interrupted and succession begins anew.

All ecological sites have a reference plant community phase, which serves as the basis for characterizing each site. It is the plant community that developed as a result of all site-forming factors and is considered to be best adapted to the unique combination of environmental factors associated with the site. The reference plant community phase is in dynamic equilibrium with its environment and is maintained by both biotic and abiotic pressures.

Major abiotic factors influencing plant communities in the survey area include fire, caused by both humans and lightning; aspect, which can cause local microclimates to be either warmer and drier (south or west slopes) or cooler and wetter (north and east slopes); elevation, as average daily high and low temperatures decrease with increasing elevation; and soil properties such as texture, depth, and plant available water capacity. Precipitation also has a major influence on plant communities in the area. Precipitation influences species survival and the local growing season. Soils warm up more quickly in spring in areas that receive less cold rain. At the higher elevations, the snowpack persists into spring and buffers the soil, keeping the soil moist and cool until late in spring or early in summer.

No plant community is static; the biotic and abiotic factors present at any time can cause transitions, either abrupt or gradual, from one plant community, or state, to another. Sometimes these transitions are gradual, and the effects can be reversed by merely ceasing the activity causing the transition pressure. Commonly, the transitions are abrupt (such as after a fire or mass wasting) and only a major input of energy (such as mechanical activity or use of chemicals) can move the community from the new state back to a previous state. Even after the desired plant community is re-established, unless all the factors causing the transition pressure are addressed, the plant community will again transition to a different, commonly less desirable, community.

The common and scientific names and the symbol for the plant species inventoried for the ecological site descriptions are given in tables 8 and 9. The names are alphabetized by common name in [table 8](#) and by the U.S. Department of Agriculture plant symbol in [table 9](#) (USDA, 2014). The ecological site and characteristic vegetation for rangeland soils is given in [table 10](#). The common trees, ecological site, and common understory vegetation for forested soils is given in [table 11](#). [Table 12](#) summarizes the physiography, climate, landscape, parent material, and ecological site names and numbers for each major soil component of each map unit in the survey area.

A summary of the forestland and rangeland ecological sites is given in this section. Complete descriptions of the ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service, and in the Ecological Site Information System (ESIS).

## Forestland Ecological Sites

*Ecological site number:* F003XN940WA

*Ecological site scientific name:* *Populus balsamifera* ssp. *trichocarpa*-*Tsuga heterophylla/Mahonia nervosa/Goodyera oblongifolia* (black cottonwood-western hemlock/Cascade Oregongrape/western rattlesnake plantain)

*Ecological site common name:* Southern Washington Cascades Frigid Riparian Forest  
*Associated soils:* Carbon, Comet

This ecological site is along rivers on flat, historic flood plains that have a seasonal high water table within a depth of 25 centimeters of the soil surface (fig. 60). Black cottonwood (*Populus balsamifera* ssp. *Trichocarpa*) and western hemlock (*Tsuga heterophylla*) are the most common overstory species, but a variety of species are present, including western redcedar (*Thuja plicata*), red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), grand fir (*Abies grandis*), and Douglas-fir (*Pseudotsuga menziesii*). The most common natural disturbance is flooding, the volume and longevity of which determines the effect on the dynamics of the forest. Black cottonwood and red alder germinate most successfully on the bare mineral soil that is present after the site is scoured by flooding. The longer the period between major floods, the more diverse the overstory becomes as conifers establish. The understory commonly is shrubby. It consists of Cascade Oregongrape (*Mahonia nervosa*), vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis*), and devilsclub (*Oplopanax*



Figure 60.—Typical area of Southern Washington Cascades Frigid Riparian Forest (F003XN940WA) forestland ecological site.

*horridus*). In the more flood-prone areas, the shrubs may be less dense, allowing more light to reach the forest floor. An herb layer that consists of western rattlesnake plantain (*Goodyera oblongifolia*), ladyfern (*Athyrium filix-femina*), Canadian wildginger (*Asarum caudatum*), western brackenfern (*Pteridium aquilinum*), queencup bead lily (*Clintonia uniflora*), starry false lily of the valley (*Maianthemum stellatum*), and western swordfern (*Polystichum munitum*) is in scattered areas.

*Ecological site number:* F003XN941WA

*Ecological site scientific name:* *Thuja plicata*-*Alnus rubra*/*Lysichiton americanus*/*Oxalis oregana* (western redcedar-red alder/American skunkcabbage/Oregon oxalis)

*Ecological site common name:* Southern Washington Cascades Wet Frigid Coniferous Forest

*Associated soil:* Sunbeam

This ecological site is in depressions that have a seasonal high water table (fig. 61). Western redcedar (*Thuja plicata*) and red alder (*Alnus rubra*) are the most common overstory species, but western hemlock (*Tsuga heterophylla*) is also present. The most common natural disturbance is flooding, the volume and longevity of which determines the effect on the dynamics of the forest. Another major disturbance is windthrow due to the seasonal high water table. The shallow rooting zone causes roots to grow laterally, resulting in more frequent tip-ups in these saturated areas. This in turn causes more openings in the canopy, which allow more sunlight to reach the forest floor, leading to a shrubby understory. Vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis*), devilsclub (*Oplopanax horridus*), and thimbleberry (*Rubus parviflorus*) make up the dense subcanopy. Frequent tip-ups also result in a hummocky surface with an abundance of downed woody debris. Growth of many species is limited to the micro-high positions, and growth of some herb species is limited to the depressions created by the downed woody debris. An herb layer that consists of American skunkcabbage (*Lysichiton americanus*), Oregon oxalis (*Oxalis oregana*), western swordfern (*Polystichum munitum*), deer fern (*Blechnum spicant*), western oakfern (*Gymnocarpium dryopteris*), and twinflower (*Linnaea borealis*) is in scattered areas.

*Ecological site number:* F003XN942WA

*Ecological site scientific name:* *Tsuga heterophylla*-*Thuja plicata*/*Mahonia nervosa*/*Goodyera oblongifolia* (western hemlock-western redcedar/Cascade Oregongrape/western rattlesnake plantain)

*Ecological site common name:* Southern Washington Cascades Moist Frigid Coniferous Forest

*Associated soil:* Tokaloo

This ecological site is on the warm, moist, lower slopes of Mount Rainier at an elevation of as high as about 1415 meters, depending on aspect (fig. 62). This site is in depressions that have a seasonal high water table at a depth of 25 to 50 centimeters from the soil surface. Western hemlock (*Tsuga heterophylla*) and western redcedar (*Thuja plicata*) are the most common overstory species, but Douglas-fir (*Pseudotsuga menziesii*) is also present. The heavy shade provided by a hemlock/redcedar forest favors the gradual replacement of Douglas-fir with the more shade-tolerant trees in the absence of a major disturbance. Red alder (*Alnus rubra*) may also be a minor component in the overstory. The most common natural disturbance is windthrow due to the seasonal high water table. The shallow rooting zone causes roots to grow laterally, resulting in more frequent tip-ups in these saturated areas. This in turn causes more openings in the canopy, which allow more sunlight to reach the forest floor, resulting in a shrubby understory. Cascade Oregongrape (*Mahonia nervosa*), vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis*), devilsclub (*Oplopanax horridus*), and



Figure 61.—Typical area of Southern Washington Cascades Wet Frigid Coniferous Forest (F003XN941WA) forestland ecological site.

thimbleberry (*Rubus parviflorus*) make up the dense subcanopy. Frequent tip-ups also result in a hummocky surface with an abundance of downed woody debris. Growth of many species is limited to the micro-high positions, and growth of some herb species is limited to the depressions created by the downed woody debris. An herb layer that consists of western rattlesnake plantain (*Goodyera oblongifolia*), western swordfern (*Polystichum munitum*), deer fern (*Blechnum spicant*), western oakfern (*Gymnocarpium dryopteris*), Oregon oxalis (*Oxalis oregana*), twinflower (*Linnaea borealis*), and American skunkcabbage (*Lysichiton americanus*) is in scattered areas.

*Ecological site number:* F003XN943WA

*Ecological site scientific name:* *Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon/Mahonia nervosa* (western hemlock- Douglas-fir/salal/Cascade Oregon grape)

*Ecological site common name:* Southern Washington Cascades Frigid Coniferous Forest

*Associated soils:* Kautz, Goldenlakes, Ingraham

This ecological site is on the warm, moist, lower slopes of Mount Rainier at an elevation of as high as 1100 meters, depending on aspect (fig. 63). It is at lower elevations on north- and east-facing slopes and at higher elevations on south- and west-facing slopes. Western hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*) are the most common overstory species, and western redcedar (*Thuja plicata*) is a minor component. Bigleaf maple (*Acer macrophyllum*) may also be a minor component. The most common disturbance on this site is wind, which results in patchy, small pockets of windthrown overstory trees, commonly in areas that are affected by root-, butt-, or stem-rot. The resulting openings in the canopy allow some sunlight to reach the forest floor, which benefits the understory. The historic fire regime is one of low frequency (150 to 300 years).



Figure 62.—Typical area of Southern Washington Cascades Moist Frigid Coniferous Forest (F003XN942WA) forestland ecological site.

or more) and moderate to high intensity. The fires are, in effect, stand-replacing, but individual trees or patches of trees survive, providing a seed source for re-establishment. The more open the forest canopy, the more dense and diverse the understory. Salal (*Gaultheria shallon*), Cascade Oregon grape (*Mahonia nervosa*), vine maple (*Acer circinatum*), red huckleberry (*Vaccinium parvifolium*), black mountain huckleberry (*Vaccinium membranaceum*), and prince's pine (*Chimaphila umbellata*) are the main shrub species in areas where the overstory canopy is relatively open,



Figure 63.—Typical area of Southern Washington Cascades Frigid Coniferous Forest (F003XN943WA) forestland ecological site.

and western swordfern (*Polystichum munitum*), deerfoot vanillaleaf (*Achlys triphylla*), and myrtle pachistima (*Paxistima myrsinoides*) are common forbs.

*Ecological site number:* F003XN944WA

*Ecological site scientific name:* *Populus balsamifera* ssp. *Trichocarpa*-*Abies amabilis*/ *Acer circinatum*/*Polystichum munitum* (black cottonwood-Pacific silver fir/vine maple/western swordfern)

*Ecological site common name:* Southern Washington Cascades Low Cryic Riparian Forest

*Associated soils:* Flett, Narada

This ecological site is along rivers on flat, historic flood plains that are subject to seasonal flooding (fig. 64). Black cottonwood (*Populus balsamifera* ssp. *Trichocarpa*) and Pacific silver fir (*Abies amabilis*) are the most common overstory species, but a variety of species are also common, including western redcedar (*Thuja plicata*), Sitka alder (*Alnus viridis* ssp. *sinuata*), western hemlock (*Tsuga heterophylla*), Engelmann spruce (*Picea engelmannii*), and Douglas-fir (*Pseudotsuga menziesii*). The most common natural disturbance is flooding, the volume and longevity of which determines the effect on the dynamics of the forest. Black cottonwood and red alder germinate most successfully on the bare mineral soil that is present after the site is scoured by flooding. The longer the period between major floods, the more diverse the overstory becomes as conifers establish. The understory commonly is shrubby. Vine maple (*Acer circinatum*), Barclay's willow (*Salix barclayi*), and red huckleberry (*Vaccinium parvifolium*) make up the dense subcanopy. In the more flood-prone areas, the shrubs may be less dense, allowing more light to reach the forest floor. An herb layer that consists of western swordfern (*Polystichum munitum*), fireweed (*Chamerion angustifolium*), and prince's pine (*Chimaphila umbellata*) is in scattered areas.



Figure 64.—Typical area of Southern Washington Cascades Low Cryic Riparian Forest  
(F003XN944WA) forestland ecological site.

*Ecological site number:* F003XN945WA

*Ecological site scientific name:* *Thuja plicata*-*Alnus rubra*/*Oplopanax horridus*/  
*Lysichiton americanus* (western redcedar-red alder/devilsclub/American  
skunkcabbage)

*Ecological site common name:* Southern Washington Cascades Wet Low Cryic  
Coniferous Forest

*Associated soil:* Frogheaven

This ecological site is in depressions that have a seasonal high water table (fig. 65). Western redcedar (*Thuja plicata*) and red alder (*Alnus rubra*) are the most common overstory species, but western hemlock (*Tsuga heterophylla*) is also present. The most common natural disturbance is flooding, the volume and longevity of which determines the effect on the dynamics of the forest. Another major disturbance is windthrow due to the seasonal high water table. The shallow rooting zone causes roots to grow laterally, resulting in more frequent tip-ups in these saturated areas. This in turn causes more openings in the canopy, which allow more sunlight to reach the forest floor, resulting in a shrubby understory. Devilsclub (*Oplopanax horridus*), vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis*), and thimbleberry (*Rubus parviflorus*) make up the dense subcanopy. Frequent tip-ups also result in a hummocky surface with an abundance of downed woody debris. Growth of many species is limited to the micro-high positions, and growth of some herb species is limited to the depressions created by the downed woody debris. An herb layer that consists of American skunkcabbage (*Lysichiton americanus*), western swordfern (*Polystichum munitum*), deer fern (*Blechnum spicant*), western oakfern (*Gymnocarpium dryopteris*), five-leaved bramble (*Rubus pedatus*), and twinflower (*Linnaea borealis*) is in scattered areas.



Figure 65.—Typical area of Southern Washington Cascades Wet Low Cryic Coniferous Forest (F003XN945WA) forestland ecological site.

*Ecological site number:* F003XN946WA

*Ecological site scientific name:* *Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum* (Pacific silver fir-western redcedar/devilsclub/western swordfern)

*Ecological site common name:* Southern Washington Cascades Moist Low Cryic Coniferous Forest

*Associated soil:* Vantrump

This ecological site is on the cool, moist, lower slopes of Mount Rainier at an elevation of 550 to 1755 meters, depending on aspect (fig. 66). This site is in depressions that have a seasonal high water table at a depth of 25 to 50 centimeters from the soil surface. Pacific silver fir (*Abies amabilis*) and western redcedar (*Thuja plicata*) are the most common overstory species. Bigleaf maple (*Acer macrophyllum*), western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*), and red alder (*Alnus rubra*) may be minor components in the overstory. The most common natural disturbance is windthrow due to the seasonal high water table. The shallow rooting zone causes roots to grow laterally, resulting in more frequent tip-ups in these saturated areas. This in turn causes more openings in the canopy, which allow more sunlight to reach the forest floor, leading to a shrubby understory. Devilsclub (*Oplopanax horridus*), vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis*), and thimbleberry (*Rubus parviflorus*) make up the dense subcanopy. Frequent tip-ups also result in a hummocky surface with an abundance of downed woody debris. Growth of many species is limited to the micro-high positions, and growth of some herb species is limited to the depressions created by the downed woody debris. An herb layer that consists of western swordfern (*Polystichum munitum*), deer fern (*Blechnum spicant*), western oakfern (*Gymnocarpium dryopteris*), and twinflower (*Linnaea borealis*) is in scattered areas.



Figure 66.—Typical area of Southern Washington Cascades Moist Low Cryic Coniferous Forest (F003XN946WA) forestland ecological site.

*Ecological site number:* F003XN947WA

*Ecological site scientific name:* *Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis* (Pacific silver fir-western hemlock/black mountain huckleberry/twinflower)

*Ecological site common name:* Southern Washington Cascades Low Cryic Coniferous Forest

*Associated soils:* Longmire, Laughingwater, Arahustan, Ohanapecosh

This ecological site is in cold, moist areas at the mid elevations (about 800 to 1500 meters) on the west side of the Cascade Crest (fig. 67). Pacific silver fir (*Abies amabilis*) and western hemlock (*Tsuga heterophylla*) are the most common overstory species. Some noble fir (*Abies procera*), western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western white pine (*Pinus monticola*), and Engelmann spruce (*Picea engelmannii*) are also present. The most common disturbance on this site is windthrow. Both Pacific silver fir and western hemlock are susceptible to windthrow. The resulting openings in the canopy allow more sunlight to reach the forest floor. The historic fire regime is one of low frequency (300 years or more) and high intensity, and the fires are stand-replacing. Common understory shrubs include black mountain huckleberry (*Vaccinium membranaceum*), red huckleberry (*Vaccinium parvifolium*), prince's pine (*Chimaphila umbellata*), bunchberry dogwood (*Cornus canadensis*), and vine maple (*Acer circinatum*). Common forbs include twinflower (*Linnaea borealis*), western swordfern (*Polystichum munitum*), deerfoot vanillaleaf (*Achlys triphylla*), myrtle pachistima (*Paxistima myrsinites*), and common beargrass (*Xerophyllum tenax*).



Figure 67.—Typical area of Southern Washington Cascades Low Cryic Coniferous Forest (F003XN947WA) forestland ecological site.

*Ecological site number:* F003XN948WA

*Ecological site scientific name:* *Alnus viridis* ssp. *Sinuata*-*Acer circinatum/Sambucus racemosa/Rubus parviflorus* (Sitka alder-vine maple/red elderberry/thimbleberry)

*Ecological site common name:* Southern Washington Cascades Low Cryic Deciduous Forest

*Associated soil:* Summerland

This ecological site is in cold, moist areas on active avalanche chutes at an elevation of 690 to 1800 meters (fig. 68). Sitka alder (*Alnus viridis* ssp. *sinuata*) and vine maple (*Acer circinatum*) are the most common species, and they grow nearly prostrate in response to the snowload and recurring avalanches. The recurring avalanches do not allow for the establishment of a forested overstory, but seedlings of tree species such as Pacific silver fir (*Abies amabilis*), noble fir (*Abies procera*), western hemlock (*Tsuga heterophylla*), and western redcedar (*Thuja plicata*) may encroach from the forested edges. Over time, the majority of these rigid-trunked trees will be snapped off by the avalanches. Common understory shrubs include red elderberry (*Sambucus racemosa*), thimbleberry (*Rubus parviflorus*), salmonberry (*Rubus spectabilis*), and devilsclub (*Oplopanax horridus*). Common forbs include fireweed (*Chamerion angustifolium*), ladyfern (*Athyrium filix-femina*), claspleaf twistedstalk (*Streptopus amplexifolius*), and common beargrass (*Xerophyllum tenax*).



Figure 68.—Vivid autumn color in a typical area of Southern Washington Cascades Low Cryic Deciduous Forest (F003XN948WA) forestland ecological site. Areas protected from recurring avalanches and supporting Southern Washington Cascades Low Cryic Coniferous Forest (F003XN947WA) forestland ecological site adjacent to deciduous forest cover.

*Ecological site number:* F003XN949WA

*Ecological site scientific name:* *Callitropsis nootkatensis*-*Alnus viridis* ssp. *Sinuata*/  
*Salix barclayi*/*Rubus pedatus* (Alaska cedar-Sitka alder/ Barclay's willow/  
five-leaved bramble)

*Ecological site common name:* Southern Washington Cascades High Cryic Riparian  
Forest

*Associated soil:* Flett, cold

This ecological site is along rivers on flat, historic flood plains that have a seasonal high water table (fig. 69). Alaska cedar (*Callitropsis nootkatensis*) and Sitka alder (*Alnus viridis* ssp. *sinuata*) are the most common overstory species. A variety of other species is also common, including Pacific silver fir (*Abies amabilis*), Engelmann spruce (*Picea engelmannii*), black cottonwood (*Populus balsamifera* ssp. *Trichocarpa*), and Douglas-fir (*Pseudotsuga menziesii*). The most common natural disturbance is flooding, the volume and longevity of which determines the effect on the dynamics of the forest. Black cottonwood and Sitka alder germinate most successfully on the bare mineral soil that is present after the site is scoured by flooding. The longer the period between major floods, the more diverse the overstory becomes as conifers establish.



Figure 69.—Typical area of Southern Washington Cascades High Cryic Riparian Forest (F003XN949WA) forestland ecological site at Indian Bar.

The understory on this site commonly is shrubby. Barclay's willow (*Salix barclayi*) and vine maple (*Acer circinatum*) make up the dense subcanopy. In the more flood-prone areas, the shrubs may be less dense, allowing more light to reach the forest floor. An herb layer that consists of five-leafed bramble (*Rubus pedatus*), fireweed (*Chamerion angustifolium*), and pearly everlasting (*Anaphalis margaritacea*) is in scattered areas.

*Ecological site number:* F003XN950WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Callitropsis nootkatensis*/ *Rhododendron albiflorum*/*Rubus lasiococcus* (mountain hemlock-Alaska cedar/Cascade azalea/dwarf bramble)

*Ecological site common name:* Southern Washington Cascades Moist High Cryic Coniferous Forest

*Associated soils:* Mysticlake, Wonderland

This ecological site is on the cold, moist, slopes of Mount Rainier at an elevation of 975 to 2420 meters, depending on aspect (fig. 70). This site is in depressions that have a seasonal high water table at a depth of 25 to 50 centimeters from the soil surface. Mountain hemlock (*Tsuga mertensiana*) and Alsaka cedar (*Callitropsis nootkatensis*) are the most common overstory species. Pacific silver fir (*Abies amabilis*), noble fir (*Abies procera*), subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*), and Sitka alder (*Alnus viridis* ssp. *sinuata*) may be minor components in the overstory. The most common natural disturbance is windthrow due to the seasonal high water table. The shallow rooting zone causes roots to grow



Figure 70.—Typical area of Southern Washington Cascades Moist High Cryic Coniferous Forest (F003XN950WA) forestland ecological site.

laterally, resulting in more frequent tip-ups in these saturated areas. This in turn causes more openings in the canopy, which allow more sunlight to reach the forest floor, leading to a shrubby understory. Cascade azalea (*Rhododendron albiflorum*), devilsclub (*Olopanax horridus*), vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis*), and thimbleberry (*Rubus parviflorus*) make up the dense subcanopy. Frequent tip-ups also result in a hummocky surface with an abundance of downed woody debris. Growth of many species is limited to the micro-high positions, and growth of some herb species is limited to the depressions created by the downed woody debris. An herb layer that consists of dwarf bramble (*Rubus lasiococcus*), deer fern (*Blechnum spicant*), western oakfern (*Gymnocarpium dryopteris*), and twinflower (*Linnaea borealis*) is in scattered areas.

*Ecological site number:* F003XN951WA

*Ecological site scientific name:* *Tsuga mertensiana*-*Abies lasiocarpa*/ *Menziesia ferruginea*/*Xerophyllum tenax* (mountain hemlock-subalpine fir/rusty menziesia/common beargrass)

*Ecological site common name:* Southern Washington Cascades High Cryic Coniferous Forest

*Associated soils:* Tipsoo, Unicornpeak, Owyhigh, Ipsut, Glacierisland, Sheepskull, Sluiskin

This ecological site is in cold, moist areas at high elevations (from about 1400 meters up to treeline) (fig. 71). The most common overstory species are mountain hemlock (*Tsuga mertensiana*) and subalpine fir (*Abies lasiocarpa*). Other common



Figure 71.—Typical area of Southern Washington Cascades High Cryic Coniferous Forest (F003XN951WA) forestland ecological site.

tree species include Pacific silver fir (*Abies amabilis*), noble fir (*Abies procera*), Alaska cedar (*Callitropsis nootkatensis*), and Engelmann spruce (*Picea engelmannii*). Mountain hemlock and Pacific silver fir are considered highly susceptible to laminated root rot (*Phellinus weiri*), which causes patches of mortality. Subalpine fir is less susceptible to this root rot, and Alaska cedar and whitebark pine (*Pinus albicaulis*) are considered to be tolerant. This fungus can alter the composition of the forest. The historic fire regime is one of low frequency (500 years or more) and high intensity. The fires are stand-replacing. Common understory shrubs include rusty menziesia (*Menziesia ferruginea*), black mountain huckleberry (*Vaccinium membranaceum*), Sitka mountain-ash (*Sorbus sitchensis* var. *sitchensis*), and Cascade azalea (*Rhododendron albiflorum*). Common forbs include common beargrass (*Xerophyllum tenax*), Sitka valerian (*Valeriana sitchensis*), sidebells wintergreen (*Orthilia secunda*), smooth woodrush (*Luzula glabrata*), dwarf bramble (*Rubus lasiococcus*), and five-leaved bramble (*Rubus pedatus*).

*Ecological site number:* F003XN952WA

*Ecological site scientific name:* *Alnus viridis* ssp. *Sinuata*-*Acer circinatum/Sorbus sitchensis* var. *sitchensis*/*Valeriana sitchensis* (Sitka alder-vine maple/Sitka mountain-ash/Sitka valerian)

*Ecological site common name:* Southern Washington Cascades High Cryic Deciduous Forest

*Associated soil:* Summerland, cold

This ecological site is in cold, moist areas of active avalanche chutes at the higher elevations (above about 1100 meters) ([fig. 72](#)). Sitka alder (*Alnus viridis* ssp. *sinuata*) and vine maple (*Acer circinatum*) are the most common species, and they grow nearly prostrate in response to the snowload and recurring avalanches. The recurring avalanches do not allow for the establishment of a coniferous overstory, but seedlings of tree species such as Pacific silver fir (*Abies amabilis*), subalpine fir (*Abies lasiocarpa*), noble fir (*Abies procera*), Alaska cedar (*Callitropsis nootkatensis*), and mountain hemlock (*Tsuga mertensiana*) may encroach from the forested edges. Over time, the majority of these rigid-trunked trees will be snapped off by the avalanches. Common understory shrubs include Sitka mountain-ash (*Sorbus sitchensis* var. *sitchensis*) and devilsclub (*Oplopanax horridus*). Common forbs include Sitka valerian (*Valeriana sitchensis*), fireweed (*Chamerion angustifolium*), false hellebore (*Veratrum viride*), and common beargrass (*Xerophyllum tenax*).



**Figure 72.—Typical area of Southern Washington Cascades High Cryic Deciduous Forest (F003XN952WA) forestland ecological site.**

## Rangeland Ecological Sites

Plant communities in the subalpine and alpine zones are primarily influenced by climate, since conditions are extremely cold. Temperature and availability of moisture during the growing season are critical factors. At the high elevations, the growing season is very short because of the cold temperatures. The winds, which are usually present at the high elevations, exacerbate the effects of the cold air and can cause excessive drying of exposed areas and scouring of exposed plants. Any landscape features that protect plants from the wind or are oriented to create local warm pockets will affect the composition of the plant communities at high elevations. Because the growing season is so short, any factor that helps to retain heat will contribute to the success of plant communities.

Generally, annual precipitation is more than adequate. However, the majority of the precipitation occurs in October through April, when most of the subalpine and alpine zones are still covered with snow. During the short growing season in summer, soil water can be limited due to topographic position, plant available water capacity, and evapotranspiration. Summer rain and cloud cover have an important influence on the amount of moisture available to growing plants. Generally, areas on the west side of the survey area have more cloud cover, receive more precipitation in summer, and have deeper snowpack at higher elevations, resulting in lusher, more productive plant communities.

Factors that influence plant species distribution and production include how quickly the snow melts and the active growing season begins, soil temperature during the growing season, availability of soil moisture during the growing season, soil fertility, protection from wind, and disturbances such as freeze-thaw effects, soil erosion, fire, avalanches, landslides and rockslides, and volcanic eruptions.

Soil temperature during the growing season is an important factor for plant growth. At the beginning of the growing season, a minimum soil temperature must be achieved before plant growth can start. This minimum varies for different species. If the minimum is reached, plants may start growing even under snow cover. Soil temperature is influenced by the average daily air temperature and by the temperature of water entering the soil from rainfall and snowmelt and of the water moving laterally through the soil. Soils fed by snowmelt or cold rains can cool down, slowing plant growth until the air temperature tempers the effect of the cold water. After the early part of the growing season, plant processes such as flowering commonly are triggered by the length of the days. In fall, dormancy is affected by the length of the days and soil temperature.

The plant communities in the alpine and subalpine zones are generally composed of a mixture of graminoids (grasses, sedges, and rushes), forbs, shrubs, and small trees. Since scouring of plants by wind and snow and ice particles is nearly constant, taller trees and shrubs generally are present only in protected areas. The trees in these communities are generally short and tend to grow laterally rather than upright. Woody vegetation is more dominant in areas with more available soil moisture and/or cloud cover in summer, in areas where disturbance has been minimal, and in areas more protected from damaging winds.

*Ecological site number:* R003XN540WA

*Ecological site common name:* Southern Washington Cascades Wet Subalpine Parkland

*Associated soil:* Williwakas

This ecological site is generally in depressions and swales of cirque floors at an elevation of 1000 to 2200 meters ([fig. 73](#)). The mean annual precipitation is 1345 to 3175 millimeters, and the mean annual air temperature is 1 to 7 degrees C. Slopes



Figure 73.—Typical area of Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA) rangeland ecological site.

are 0 to 10 percent. The water table is commonly at or near the soil surface for much of the growing season. These sites generally retain snow cover later in summer than do sites on south and west slopes; thus, plant growth starts more slowly due to the cooling effects of the high water table at the beginning of the growing season. Flowering is generally later on this site than in areas that are less saturated. Common plants include black alpine sedge (*Carex nigricans*), water sedge (*Carex aquatilis*), bluejoint reedgrass (*Calamagrostis canadensis*), white marsh marigold (*Caltha leptosepala*), rush (*Juncus*), bog Labrador tea (*Ledum groenlandicum*), and water parsley (*Oenanthe sarmentosa*). A typical area of this ecological site is in topographic depressions in Paradise Valley.

*Ecological site number:* R003XN541WA

*Ecological site common name:* Southern Washington Cascades Moist Subalpine Parkland

*Associated soils:* Burroughs, moist; Chenuis, moist; Littletahoma, moist; Mountwow, moist; Sarvant, moist; Tatoosh, moist

This ecological site is at the mid and high elevations (1100 to 2100 meters) of the Southern Washington Cascades (fig. 74). Slopes are 0 to 100 percent. The mean annual precipitation is 2000 to 3430 millimeters, and the mean annual air temperature is 1 to 6 degrees C. This site is on all aspects of the south- and west-facing slopes of Mount Rainier. The soils generally are coarse textured, formed in volcanic ash and colluvium, and are high in content of organic matter. Because this site is on south- and west-facing slopes, plant growth generally starts earlier in summer than it does on other sites in the subalpine zone. The seasonal snowpack melts earlier on this site, and the lack of saturation in the soil profile allows the soils to warm up



Figure 74.—Typical area of Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA) rangeland ecological site.

quickly as the air temperature rises. Commonly, this combination of location, slope, and coarse textured soils would limit soil moisture for plant growth in summer. However, the prevailing winds from the south and west that result in significant orographic precipitation and the cloud cover provide a steady supply of moisture for plant growth throughout summer. Common plants include Cascade huckleberry (*Vaccinium deliciosum*), pink mountain-heather (*Phyllodoce empetriformis*), white mountain heather (*Cassiope mertensiana*), Sitka valerian (*Valeriana sitchensis*), false hellebore (*Veratrum viride*), American bistort (*Polygonum bistortoides*), western columbine (*Aquilegia formosa*), arctic lupine (*Lupinus arcticus*), spreading phlox (*Phlox diffusa*), arrow-leaved ragwort (*Senecio triangularis*), mountain hairgrass (*Vahlodea atropurpurea*), and showy sedge (*Carex spectabilis*). Typical areas of this ecological site are the meadows immediately above the Paradise Visitor Center.

*Ecological site number:* R003XN542WA

*Ecological site common name:* Southern Washington Cascades Subalpine Parkland

*Associated soils:* Burroughs, Chenuis, Littletahoma, Mountwow, Sarvant, Tatoosh, Wahpenayo

This ecological site is at the mid and high elevations (1100 to 2200 meters) of the Southern Washington Cascades (fig. 75). The soils generally are coarse textured, formed in volcanic ash and colluvium, and are high in content of organic matter. Slopes are 0 to 100 percent. The mean annual precipitation is 1550 to 2920 millimeters, and the mean annual air temperature is 1 to 6 degrees C. This ecological site is on all aspects on the north- and east-facing slopes of Mount Rainier. Prevailing winds from the south and west result in a rainshadow produced by Mount Rainier, which reduces the precipitation in summer and the cloud cover. This rainshadow and the



Figure 75.—Typical area of Southern Washington Cascades Subalpine Parkland (R003XN542WA) rangeland ecological site at Yakima Park.

coarse texture of the soils limit the amount of moisture available to plants during the growing season. The drying winds on the exposed slopes and ridges also contribute to the moisture deficient due to increased evapotranspiration. These effects are most pronounced on the exposed south- and west-facing slopes and on ridgetops. Common plants include fescue (*Festuca*), mountain hairgrass (*Vahlodea atropurpurea*), smooth woodrush (*Luzula glabrata*), Sitka valerian (*Valeriana sitchensis*), false hellebore (*Veratrum viride*), American bistort (*Polygonum bistortoides*), arctic lupine (*Lupinus arcticus*), high mountain cinquefoil (*Potentilla flabellifolia*), subalpine fleabane (*Erigeron peregrinus*), Cascade desertparsley (*Lomatium martindalei*), spreading phlox (*Phlox diffusa*), and Cascade huckleberry (*Vaccinium deliciosum*). Typical areas of this ecological site are the meadows in Sunrise and Yakima Parks.

*Ecological site number:* R003XN543WA

*Ecological site common name:* Southern Washington Cascades Alpine Tundra

*Associated soils:* Burroughs, alpine; Chenuis, alpine; Mountwow, alpine; Sarvant, alpine; Tatoosh, alpine; Tatoosh, volcanic cone; Wahpenayo, alpine

This ecological site is at the upper limits of plant growth on Mount Rainier, at an elevation of 1400 to 3350 meters (fig. 76). Areas of this site at the lower elevations are typically cooler than are other areas at the same elevation due to factors such as proximity to permanent ice. The soils formed in volcanic ash and colluvium, are coarse textured, and are low in content of organic matter. Slopes are 5 to 100 percent. The climate is characterized by cool, dry summers and cold, wet winters. The mean annual precipitation is 2210 to 4700 millimeters, and the mean annual air temperature is -8 to 4 degrees C. The seasonal snowpack melts later on this site than on other sites. Also, the air and soil temperatures are significantly cooler, resulting in a significantly shorter growing season on this site than on other sites in the park. Common plants



Figure 76.—Typical area of Southern Washington Cascades Alpine Tundra (R003XN543WA) rangeland ecological site on Burroughs Mountain.

include Davis' knotweed (*Polygonum davisiae*), tundra aster (*Oreostemma alpigenum* var. *alpigenum*), alpine leafybract aster (*Symphyotrichum foliaceum* var. *foliaceum*), penstemon (*Penstemon* sp.), common yarrow (*Achillea millefolium*), common juniper (*Juniperus communis* var. *montana*), spreading phlox (*Phlox diffusa*), Tiling's monkeyflower (*Mimulus tilingii*), arctic lupine (*Lupinus arcticus*), and asahinea lichen (*Asahinea*). A typical area of this ecological site is the top of Burroughs Mountain.

*Ecological site number:* R003XN544WA

*Ecological site common name:* Southern Washington Cascades Wet Alpine Tundra

*Associated soil:* Meany

This ecological site is in depressions and swales of cirque floors at an elevation of 1400 to 2400 meters. It is at the upper limits of plant growth on Mount Rainier (fig. 77). Areas of this site at the lower elevations are typically cooler than are other areas at the same elevation due to factors such as proximity to permanent ice. The water table is commonly at or near the surface for much of the growing season. The soils formed in alluvium derived from volcanic ash and glacial till, are coarse textured, and are low in content of organic matter. Slopes are 5 to 25 percent. The mean annual precipitation is 2260 to 3935 millimeters, and the mean annual air temperature is 1 to 4 degrees C. The seasonal snowpack melts later on this site than on other sites. Also, the air and soil temperatures are significantly cooler, resulting in a significantly shorter growing season on this site than on other sites on Mount Rainier. Common plants include Tiling's monkeyflower (*Mimulus tilingii*), arctic lupine (*Lupinus arcticus*), parridgefoot (*Luetkea pectinata*), and black alpine sedge (*Carex nigricans*). Typical areas of this ecological site are in streambeds near the end of the Paradise Glacier trail.



Figure 77.—Typical area of Southern Washington Cascades Wet Alpine Tundra (R003XN544WA) rangeland ecological site below Paradise Glaciers.

*Ecological site number:* R003XN545WA

*Ecological site common name:* Southern Washington Cascades Debris Covered Glaciers

*Associated soil:* Tamanos

This ecological site is on the debris-covered termini of alpine glaciers at an elevation of 1100 to 2200 meters (fig. 78). Several large glaciers on Mount Rainier have carved steep-sided valleys. The valleys walls formed in old moraines that consist of loose andesitic till. Gravity causes the loose till material to move downslope onto the termini of alpine glaciers. Other sources of debris include rockfalls, material released by freeze-thaw activity, and waterborne and windborne sediment. The soils are coarse textured, have a very low content of organic matter, have very low cation-exchange capacity, and are about 50 centimeters deep to permafrost. Slopes are 5 to 65 percent. The mean annual precipitation is 2300 to 3600 millimeters, and the mean annual air temperature is 0 to 5 degrees C. Because of the permafrost, the subsurface soil temperature is much cooler than that of other soils at the same elevation. This cooling effect shifts the plant species composition to that of subalpine and alpine zones. The other major influence on species composition is the ongoing disturbance from shifting subsurface ice and downslope movement of loose till material from the valley walls. These influences result in growth of very early seral communities. Seedlings of later seral stage species, such as Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*) and Sitka alder (*Alnus viridis* ssp. *Sinuata*) may become established, but they rarely grow to full size. Common plants



Figure 78.—Typical area of Southern Washington Cascades Debris Covered Glaciers (R003XN545WA) rangeland ecological site on Carbon Glacier.

on this site include fireweed (*Chamerion angustifolium*), Hornemann's willowherb (*Epilobium hornemannii*), pearly everlasting (*Anaphalis margaritacea*), white hawkweed (*Hieracium albiflorum*), Drummond's rush (*Juncus drummondii*), Mertens' rush (*Juncus mertensianus*) and Scouler's willow (*Salix scouleriana*). Typical areas of this ecological site are on Carbon Glacier at an elevation of less than 1800 meters.

*Ecological site number:* R003XN640WA

*Ecological site common name:* Southern Washington Cascades Low Cryic Bog or Fen

*Associated soil:* Ghost, warm

This ecological site is at low to mid elevations (650 to 1400 meters) of the Southern Washington Cascades (fig. 79). It is on flood plains and in swales and depressions of terraces and debris aprons. It is typically in poorly drained areas that are subject to residual ponding from overbank flooding, groundwater discharge from nearby slopes, or a seasonal high water table associated with meltwater. The water table is commonly at or near the surface for much of the growing season, and the rate of organic decomposition is slow due to the anaerobic and acid conditions. These conditions result in a nutrient-poor environment. Slopes are 0 to 5 percent. The soils are mucky and formed in organic material with bands of volcanic ash. The mean annual precipitation is 1345 to 2720 millimeters, and the mean annual air temperature is 4 to 7 degrees C. Common plants include American skunkcabbage (*Lysichiton americanus*), water sedge (*Carex aquatilis*), bluejoint reedgrass (*Calamagrostis canadensis*), mannagrass (*Glyceria spp.*), white marsh marigold (*Caltha leptosepala*), black alpine sedge (*Carex nigricans*), rush (*Juncus*), bog Labrador tea (*Ledum*



Figure 79.—Typical area of Southern Washington Cascades Low Cryic Bog or Fen (R003XN640WA) rangeland ecological site.

*groenlandicum*), and water parsley (*Oenanthe sarmentosa*). Typical areas of this ecological site are on terraces of the Nisqually River, adjacent to the road leading to Longmire.

*Ecological site number:* R003XN641WA

*Ecological site common name:* Southern Washington Cascades High Cryic Bog or Fen

*Associated soil:* Ghost

This ecological site is in the unforested areas at the mid and high elevations (1100 to 2000 meters) of the Southern Washington Cascades (fig. 80). It is in depressions and on slopes surrounding lakes or ponds, cirque floors, and flood plains. It is typically in poorly drained areas that are subject to residual ponding from overbank flooding, groundwater discharge from nearby slopes, or a seasonal high water table associated with meltwater. The water table is commonly at or near the surface for much of the growing season, and the rate of organic decomposition is slow due to the anaerobic and acid conditions. These conditions result in a nutrient-poor environment. Slopes are 0 to 5 percent. The soils are mucky and formed in organic material with bands of volcanic ash. The mean annual precipitation is 1500 to 2970 millimeters, and the mean annual air temperature is 2 to 6 degrees C. The cooler temperatures at the higher elevations result in a shorter growing season than that of similar sites that are at lower elevations or are surrounded by a protective tree canopy. Common plants include tufted bulrush (*Trichophorum cespitosum*), American skunkcabbage (*Lysichiton americanus*), water sedge (*Carex aquatilis*), bluejoint reedgrass (*Calamagrostis canadensis*), white marsh marigold (*Caltha leptosepala*), black alpine sedge (*Carex nigricans*), rush (*Juncus*), bog Labrador tea (*Ledum groenlandicum*), and water parsley (*Oenanthe sarmentosa*). Typical areas of this ecological site are on the shores of Reflection Lake.



Figure 80.—Typical area of Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA) rangeland ecological site.

## Land Management

In tables 13 through 16, interpretive ratings are given for various aspects of land management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of land management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of land management (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low*, *moderate*, and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

Rating class terms for hazard of erosion are expressed as slight, moderate, and severe and very severe. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for erosion is highest (1.00) and the point at which the potential is lowest (0.00).

The following paragraphs indicate the soil properties considered in rating the soils for land management practices.

**Table 13.—Planting and Soil Rutting Hazard**

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of planting equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

**Table 14.—Hazard of Erosion and Suitability for Roads**

Ratings in the column *hazard of erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in areas where 50 to 75 percent of the surface has been exposed by different kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

**Table 15.—Site Preparation**

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

### Table 16.—Site Restoration

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

## Recreational Development

In tables 17 and 18, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

### Table 17.—Camp and Picnic Areas

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture

of the surface layer, depth to a water table, ponding, flooding, saturated hydraulic conductivity ( $K_{sat}$ ), and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan and saturated hydraulic conductivity ( $K_{sat}$ ).

*Picnic areas* are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, saturated hydraulic conductivity ( $K_{sat}$ ), and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan and saturated hydraulic conductivity ( $K_{sat}$ ).

### **Table 18.—Trail Management**

*Foot traffic and equestrian trails* for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

*Mountain bike and off-road vehicle trails* require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

## **Sanitary Facilities**

This section provides information for planning the development of sanitary facilities. Soils are rated for this use, and the most limiting features are identified. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for

erodibility, saturated hydraulic conductivity (Ksat), corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for septic tank absorption fields and sewage lagoons. This information, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

**Table 19** shows the degree and kind of soil limitations that affect *septic tank absorption fields* and *sewage lagoons*. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches or between a depth of 24 inches and a restrictive layer is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Saturated hydraulic conductivity (Ksat) is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table

is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.



# Soil Properties

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Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

**Table 20** lists the sample pedons in the survey area for which laboratory data are available. The information in the table can be used to access the data from the National Cooperative Soil Characterization Database of the National Cooperative Soil Survey at <http://ncsslabdatamart.sc.egov.usda.gov/>.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

## Engineering Soil Properties

**Table 21** gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

*Classification* of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 75 millimeters in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 75 millimeters in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay).

At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

*Rock fragments* larger than 250 millimeters in diameter and 75 to 250 millimeters in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 75 millimeters in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit* and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

## Physical Soil Properties

Table 22 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

*Sand* as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Silt* as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Clay* as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at  $\frac{1}{3}$ - or  $\frac{1}{10}$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water

and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Saturated hydraulic conductivity (Ksat)* refers to the ability of a soil to transmit water or air. The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

*Linear extensibility* refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at  $\frac{1}{3}$ - or  $\frac{1}{10}$ -bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

*Erosion factors* are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor Kw* indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

*Erosion factor Kf* indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1

are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

*Wind erodibility index* is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

## Chemical Properties

**Table 23** shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Cation-exchange capacity (CEC)* is the total amount of exchangeable cations that can be held by the soil, expressed in terms of centimoles per kilogram. It commonly is measured at neutral pH of 7.0 (CEC-7), but it may be measured at some other stated pH value. Soils that have a low CEC hold fewer cations and may require more frequent applications of fertilizer than those that have a high CEC. The ability to retain cations minimizes the risk of ground-water pollution.

*Effective cation-exchange capacity (ECEC)* refers to the sum of exchangeable cations plus aluminum, expressed in terms of centimoles per kilogram. It is determined for soils that have natural pH of less than or equal to 5.5 and is a measure of the CEC at the natural pH. In soils with low pH, the ECEC more accurately reflects the actual CEC of the soils. Although CEC-7 is not actually present in these soils under natural conditions, the ECEC reflects the potential CEC if the soils are limed and the pH increased to neutral.

*Soil reaction* is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Calcium carbonate equivalent* is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

*Gypsum* is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

*Salinity* is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

*Sodium adsorption ratio (SAR)* is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

## Total Soil Carbon

[Table 24](#) gives estimates of the total soil carbon, which includes organic and inorganic carbon.

*Soil organic carbon* (SOC) originates from a biological source, such as plants, animals, or micro-organisms. SOC is in both organic and mineral soil layers. It makes up about half of the weight of soil organic matter. The other half is mainly oxygen, nitrogen, and hydrogen.

*Soil inorganic carbon* (SIC) is in soil carbonates, commonly occurring as calcium carbonate layers in the soil or as clay-sized fractions throughout the soil. Carbonates in soils are most common in areas where the evaporation rate exceeds the amount of precipitation received, as in most desert environments. Generally, the carbonates accumulate from carbonatic dust or from solution during periods of wetter climates. Soil inorganic carbon is also in soils that formed in marl.

The content of SOC and SIC is expressed as kilograms per square meter to a depth of 2 meters or to hard bedrock or a cemented layer. The SOC and SIC values are estimated on a whole soil basis, corrected for content of rock fragments.

SOC can be an indicator of overall soil fertility and soil quality that affects the function of the ecosystem. Soil organic matter is the main reservoir for most plant nutrients, such as phosphorus and nitrogen. Managing for SOC by managing the soil organic matter results in an increase in these elements and in soil resiliency.

Soil organic matter binds soil particles together, which increases soil porosity and infiltration. This allows for better root penetration and waterflow into the soil.

Greater inflow of water decreases the risk of soil erosion and the potential for runoff.

Higher SOC levels improve not only soil quality but also air and water quality. Soil acts as a filter to improve water quality. Fertile soils that support plant life remove carbon dioxide from the atmosphere and increase oxygen levels through photosynthesis. Maintaining the SOC level reduces the release of carbon into the atmosphere, which can reduce the effects of global warming.

SIC influences the types of plants that can grow. A high SIC level generally is associated with a higher soil pH level, limiting the types of plants that will thrive.

Soil carbonates, the source of SIC, bind soil particles together and fill voids in the soil, which can reduce the porosity of the soil. Compacted soil carbonates may restrict root penetration and waterflow into the soil.

## Water Features

[Table 25](#) gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

*Water table* refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

*Ponding* is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

*Flooding* is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

*Duration and frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

## Soil Features

Table 26 gives estimates of various soil features. The estimates are used in land use planning.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

*Potential for frost action* is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity ( $K_{sat}$ ), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.



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# Glossary

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Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook" (available in local offices of the Natural Resources Conservation Service or on the Internet).

**ABC soil.** A soil having an A, a B, and a C horizon.

**Ablation till.** Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

**Abrupt textural change.** A soil horizon boundary or thin transitional zone characterized by a considerable increase in clay that occurs at the contact between a surface layer, subsurface layer, subsoil, or substratum.

**AC soil.** A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Albic horizon.** An eluvial horizon that is at least 1 centimeter thick or more. The color of the soil material is largely determined by the color of primary sand and silt particles rather than by the color of their coatings.

**Alkali (sodic) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Alluvial cone (debris cone).** A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

**Alluvial fan.** A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

**Alluvium.** Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

**Alpha,alpha-dipyridyl.** A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

**Alpine.** Characteristic of or resembling the European Alps, or any lofty mountain or mountain system, especially one so modified by intense glacial erosion as to

contain cirques, horns, etc. Sometimes used to designate areas above or near timberline.

**Amphibolite.** A rock consisting largely of hornblende.

**Andesite.** A fine-grained volcanic rock consisting mainly of plagioclase feldspar with small amounts of pyroxene, hornblende, or biotite. It is dark colored, mainly shades of gray or green.

**Andic soil properties.** A collection of physical and chemical properties that define the criteria for the Andisol order.

**Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Anticline.** A unit of folded strata that is a convex upland. In a single anticline, beds forming the opposite limbs of the fold dip away from its axial plane.

**Apite.** Light-colored, finely grained granite made up of quartz and feldspar.

**Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.

**Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.

**Aridic.** A soil moisture regime common to a climate that lacks soil moisture available for plant growth during the growing season. The soils are dry for more than 50 percent of the growing season.

**Arkose.** Sandstone containing unaltered feldspar; usually formed from weathered granite in mountainous regions.

**Ash (volcanic).** Unconsolidated, pyroclastic material less than 2 millimeters in all dimensions; commonly called volcanic ash.

**Ashy (family particle-size class).** A substitute class term used for the family particle-size in mineral soils.

**Ashy** (textural modifier; for example, ashy sandy loam). A term used to describe material in which the fine-earth fraction has 30 percent or more particles that are 0.02 to 2.0 millimeters in diameter. Of this, 5 percent or more is volcanic glass and the ammonium oxalate extractable aluminum plus  $\frac{1}{2}$  the ammonium oxalate extractable iron times 60 added to the percentage of volcanic glass are equal to or more than 30.

**Aspect.** The direction toward which a slope faces. Also called slope aspect.

**Aspect, north.** All compass directions with a northerly aspect, including west-northwest, northwest, north-northwest, north, north-northeast, northeast, and east-northeast. North aspects have less solar radiation than south aspects and consequently are cooler and more moist.

**Aspect, south.** All compass directions with a southerly aspect, including east-southeast, southeast, south-southeast, south, south-southwest, southwest, and west-southwest. South aspects have more solar radiation than north aspects and consequently are warmer and more droughty.

**Association, soil.** A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low .....	0 to 3
Low .....	3 to 6
Moderate.....	6 to 9
High .....	9 to 12
Very high.....	more than 12

**Avalanche chute.** The central channel-like corridor, scar, or depression along which an avalanche has moved. It may take the form of an open path in a forest, with

bent and broken trees, or an eroded surface marked by pits, scratches, and grooves.

**Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

**Backswamp.** A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

**Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

**Basalt.** A fine-grained, dark-colored extrusive igneous rock composed primarily of calcic plagioclase and pyroxene, with or without olivine.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

**Base slope** (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

**Basin.** A low area in the earth's crust, of tectonic origin, in which sediment has accumulated.

**Batholith.** A large, domed mass of intrusive igneous rock such as granite.

**Bedding plane.** A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

**Bedding system.** A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

**Bench terrace.** A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

**Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

**Bottom land.** An informal term loosely applied to various portions of a flood plain.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Breaks.** A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

**Breast height.** An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

**Breccia.** Coarse grained, clastic rock made up of angular broken rock fragments that are held together by mineral cement or are in a fine-grained matrix.

**Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

**Bulk density.** The mass of soil per unit bulk volume. Moist bulk density refers to the oven-dry weight of a given volume of soil with moisture content at or near field moisture capacity.

**Butte.** An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

**Cable yarding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**Calcic horizon.** An illuvial horizon in which secondary calcium carbonate or other carbonates have accumulated to a significant extent (Soil Survey Staff, 1999).

**Calcium carbonate equivalent.** The quantity of carbonates ( $\text{CO}_3$ ) in the soil, expressed as  $\text{CaCO}_3$  and as a percentage by weight of the fraction less than 2 millimeters in size.

**Cambic horizon.** A mineral soil horizon that is loamy very fine sand or finer textured and has soil structure rather than rock structure. The cambic horizon contains some weatherable minerals, and it is characterized by alterations or removals as indicated by redoximorphic features or by stronger chroma or redder hue than that of the underlying horizons.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Canyon.** A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

**Canyonland (general landscape).** A deeply dissected landscape composed dominantly of relatively narrow flood plains or valley floors, commonly with considerable outcroppings of bedrock on steep slopes, ledges, or cliffs and with broad summits or interfluves.

**Capillary water.** Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

**Carbonates.** Chemical compounds containing the carbonate ion  $\text{CO}_3$  in combination with bases such as calcium, magnesium, potassium, and sodium.

**Catena.** A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

**Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

**Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

**Cement rock.** Shaly limestone used in the manufacture of cement.

**Channery soil material.** Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

**Chemical treatment.** Control of unwanted vegetation through the use of chemicals.

**Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

- Cinder.** A glassy vesicular pyroclastic volcanic fragment that is 2 millimeters or more in all dimensions and is strongly cemented or stronger.
- Cirque.** A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).
- Clastic.** Pertaining to rock or sediment composed mainly of fragments derived from pre-existing rock or minerals and moved from their place of origin.
- Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- Clay depletions.** See Redoximorphic features.
- Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.
- Climax forest stage.** The culminating forest succession stage. Overstory vegetation is dominated by trees that are climax for the site. Vertical depth of the understory and overstory canopies is at a maximum. Seedlings to maximum-size, mature trees are present in varying amounts, resulting in an uneven-aged stand.
- Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.
- Climax tree.** The most competitive tree capable of growing on a particular site.
- Coarse textured soil.** Sand or loamy sand.
- Coarse-loamy.** A loamy particle-size class that is 15 percent or more fine sand or coarser, including fragments as much as 3 inches in diameter, and is less than 18 percent clay in the fine-earth fraction.
- Coarse-silty.** A loamy particle-size class that is less than 15 percent fine sand or coarser, including fragments as much as 3 inches in diameter, and is less than 18 percent clay in the fine-earth fraction.
- Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.
- Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.
- COLE (coefficient of linear extensibility).** See Linear extensibility.
- Colluvium.** Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (for example, direct gravitational action) and by local, unconcentrated runoff.
- Compaction.** The increase in soil bulk density as a result of applied loads or pressure. Compaction reduces porosity, water infiltration, and root penetration.
- Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.
- Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.
- Concretions.** See Redoximorphic features.
- Conglomerate.** A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

- Coniferous.** Pertaining to plants of the *Coniferales* order of the *Gymnospermae* subdivision. Coniferous plants have cone fruit and are commonly, but not always, evergreen. Examples include ponderosa pine, Douglas-fir, and western larch.
- Consistence, soil.** Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."
- Consociation.** A kind of soil map unit that is dominantly a single soil or miscellaneous area and similar soils.
- Continental glaciation.** Refers to the glaciers that covered much of North America during the Ice Age, as opposed to contemporary glaciers associated with mountains.
- Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.
- Coprogenous earth (sedimentary peat).** A type of limnic layer composed predominantly of fecal material derived from aquatic animals.
- Cordilleran ice sheet.** The glacial ice sheet that covered much of the northern half of North America, from the eastern face of the Rocky Mountains to the Pacific Ocean, during the Pleistocene.
- Corrosion (geomorphology).** A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.
- Corrosion (soil survey interpretations).** Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.
- Coulee.** A dry or intermittent stream valley, specifically a long, steep-walled gorge representing a channeled scabland overflow channel that carried meltwater.
- Creep.** Gradual downslope movement of soil material. It is caused by gravity but is facilitated by saturation of the material with water and by alternate freezing and thawing.
- Crown.** The upper part of a tree or shrub, including the living branches and their foliage.
- Cryic.** A soil temperature regime in which the mean annual soil temperature at a depth of 20 inches ranges from 33 to 46 degrees F. The mean summer soil temperature is less than 47 degrees for soils that have an O horizon, and it is less than 59 degrees for soils that do not have an O horizon.
- Cryoturbate.** A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.
- Culmination of the mean annual increment (CMAI).** The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.
- Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.
- Decreasers.** The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.
- Delta.** A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

- Dense layer** (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.
- Densic contact.** A boundary between soil and coherent underlying material that restricts the penetration of roots, is not cemented, and is typically referred to as dense glacial till and as a Cd horizon.
- Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.
- Depression.** Any relatively sunken part of the earth's surface, especially a low-lying area surrounded by higher ground, that has few, if any, surface drainage outlets.
- Diagnostic horizons.** Combinations of specific soil characteristics that are indicative of certain classes of soils. Those that occur at the soil surface are called epipedons, and those that occur below the soil surface are called diagnostic subsurface horizons.
- Diamict.** A nonsorted or poorly sorted, unconsolidated deposit that contains a wide range of particle sizes, commonly from clay to cobble- or boulder-sized, rounded and/or angular fragments with a clayey, silty, or sandy matrix, depending on the local source bedrock.
- Diatomaceous earth.** A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.
- Dike.** An intrusion of rock that cuts across the bedding or foliation of the pre-existing rock.
- Diorite.** A coarse-grained igneous rock consisting mainly of plagioclase but with smaller amounts of hornblende, biotite, and pyroxene. Quartz is absent or sparse. (See Quartz diorite.)
- Dip slope.** A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.
- Dissimilar soils.** Soils that behave differently and require different management than the named soils and similar soils in a map unit.
- Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.
- Dolomite.** A sedimentary rock consisting mainly of the mineral dolomite, which is a carbonate of magnesium.
- Drainage class** (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the "Soil Survey Manual."
- Drainage, surface.** Runoff, or surface flow of water, from an area.
- Drainageway.** A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.
- Draw.** A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.
- Drift.** A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or

transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

**Drift plain.** A general term applied to a glaciated plain containing mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or by running water emanating from a glacier. The term is generally applied to Pleistocene glacial deposits on plains that no longer contain glaciers.

**Duff.** A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

**Durinodes.** Nodules that are weakly cemented to indurated with silica oxide ( $\text{SiO}_2$ ).

**Duripan.** A subsurface soil horizon that is cemented by illuvial silica, commonly opal or microcrystalline forms of silica, to the degree that less than 50 percent of the volume of air-dry fragments will slake in water or hydrochloric acid.

**Earthy fill.** See Mine spoil.

**Ecological site.** An area in which climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

**Effervescence.** The gaseous response exhibited as bubbles on the soil ped when drops of dilute (1:10) hydrochloric acid (HCl) are applied. This response typically indicates the presence of calcium carbonates ( $\text{CaCO}_3$ ).

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

**Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

**Eolian deposit.** Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

**Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

**Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

**Erratic.** Refers to a rock fragment transported by glacial ice or floating ice that is different from the bedrock in the area in which it is deposited.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion* (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

*Erosion* (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

**Erosion pavement.** A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

**Erosion surface.** A land surface shaped by the action of erosion, especially by running water.

**Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

**Esker.** A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

**Extrusive rock.** Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

**Fan remnant.** A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

**Fault.** A fracture or fracture zone of the earth with displacement along one side in respect to the other.

**Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

**Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

**Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**Fine-loamy.** A loamy particle-size class that is 15 percent or more fine sand or coarser, including fragments as much as 3 inches in diameter, and is 18 to 34 percent clay in the fine-earth fraction.

**Fine-silty.** A loamy particle-size class that is less than 15 percent fine sand or coarser, including fragments as much as 3 inches in diameter, and is 18 to 34 percent clay in the fine-earth fraction.

**Firebreak.** An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

**Flaggy soil material.** Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

**Flagstone.** A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

**Flood plain.** The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

**Flood-plain landforms.** A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

- Flood-plain splay.** A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.
- Flood-plain step.** An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.
- Fluvial.** Of or pertaining to rivers or streams; produced by stream or river action.
- Foliated.** Refers to metamorphic rock that exhibits parallel structure or layering.
- Foothills.** A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).
- Footslope.** The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).
- Forb.** Any herbaceous plant not a grass or a sedge.
- Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.
- Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.
- Forestland.** Land on which the historic vegetation was dominated by a 25 percent overstory canopy cover of trees, as determined by crown perimeter-vertical projection. A tree is defined as a woody-stemmed plant that can grow to 4 meters (about 13 feet) in height at maturity.
- Fragipan.** A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.
- Fragmental.** A particle-size class used to classify mineral soils that have less than 10 percent by volume fine-earth soil material.
- Frigid.** A soil temperature regime in which the mean annual soil temperature at a depth of 20 inches ranges from 33 to 46 degrees F. The mean summer soil temperature is more than 47 degrees for soils that have an O horizon. The difference between the mean winter soil temperature and the mean summer soil temperature is more than 9 degrees F.
- Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Geomorphic surface.** A mappable area of the earth's surface that has a common history; the area is of similar age and is formed by a set of processes during an episode of landscape evolution.
- Glaciofluvial deposits.** Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.
- Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.
- Glaciomarine deposit.** Glacially eroded, terrestrially derived sediment (clay, silt, sand, and gravel) that accumulated on the ocean floor. Sediment may be accumulated as an ice-contact deposit or by fluvial transport, ice-rafting, or eolian transport.
- Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

**Graben.** An elongated, relatively depressed unit or block of the earth's crust that is bounded by faults on its long sides.

**Granite.** A coarse-grained igneous rock consisting mainly of quartz and feldspar, with more orthoclase than plagioclase. (See Granodiorite.)

**Granitic.** Term generally applied to granite or granitelike rock. It is used when referring to granite, granodiorite, quartz monzonite, quartz diorite, diorite, and granitic gneiss.

**Granitic gneiss.** A crystalline, banded metamorphic rock of granitic composition.

**Granodiorite.** A coarse-grained igneous rock consisting mainly of quartz and feldspar, with more plagioclase than orthoclase. (See Granite.)

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

**Graywacke.** An indurated sedimentary rock that consists mainly of sand-sized grains but contains fragments of feldspar, quartz, and ferromagnesian minerals.

**Ground water.** Water filling all the unblocked pores of the material below the water table.

**Grus.** The fundamental products of *in situ* granular disintegration of granite and granitic rock, dominated by intercrystal disintegration.

**Gully.** A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**Gypsum.** A mineral consisting of hydrous calcium sulfate.

**Habitat type.** The collective area occupied by a single plant association. It is defined and described on the basis of the vegetation and its associated environment.

**Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

**Hard to reclaim** (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Head slope** (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

**Hemic soil material (mucky peat).** Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

**Hill.** A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

**Hillslope.** A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

**Histic epipedon.** A thin, organic soil horizon that is saturated with water at some time during the year unless it is artificially drained. This horizon is at or near the surface of a mineral soil. It contains more than 12 percent organic carbon.

**Historic climax plant community.** The plant community that was best adapted to the unique combination of factors associated with the ecological site. It was in a

natural dynamic equilibrium with the historic biotic, abiotic, and climatic factors on its ecological site in North America at the time of European immigration and settlement.

**Holocene.** The epoch of the Quaternary period of geologic time, extending from the end of the Pleistocene (about 10,000 to 12,000 years ago) to the present.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

*O horizon*.—An organic layer of fresh and decaying plant residue.

*L horizon*.—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

*A horizon*.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon*.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

*B horizon*.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

*C horizon*.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

*Cd horizon*.—Noncemented, root-restricting layer such as dense basal till.

*Cr horizon*.—Consolidated bedrock beneath the soil that has an extremely weakly cemented to moderately cemented rupture-resistance class.

*R horizon*.—Consolidated bedrock beneath the soil that has a strongly cemented or stronger rupture-resistance class.

**Humus.** The well decomposed, more or less stable part of the organic matter in mineral soils.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff potential.

The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

**Igneous rock.** Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

**Increases.** Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increases commonly are the shorter plants and the less palatable to livestock.

**Indurated.** Refers to having a hard, brittle consistency as a result of particles being held together by cementing substances such as silica, calcium carbonate, and iron. An indurated layer can be broken by a sharp blow of a hammer.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Intake rate.** The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2 .....	very low
0.2 to 0.4.....	low
0.4 to 0.75.....	moderately low
0.75 to 1.25.....	moderate
1.25 to 1.75.....	moderately high
1.75 to 2.5.....	high
More than 2.5.....	very high

**Interfluve.** A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

**Interfluve (geomorphology).** A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

**Intermittent stream.** A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Intermontane basin.** A generic term for a wide structural depression between mountain ranges that is partly filled with alluvium.

**Intrusive rock.** Igneous rock derived from molten matter (magmas) that invaded pre-existing rock and cooled below the surface of the earth.

**Invaders.** On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

*Iron accumulations.* See Redoximorphic features.

**Iron depletions.** See Redoximorphic features.

**Kame.** A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

**Kettle.** A steep-sided, generally basin- or bowl-shaped hole or depression, in glacial drift deposits. It commonly has no surface drainage and contains water.

**Knoll.** A small, low, rounded hill rising above adjacent landforms.

**Krotovinas.** Irregular tubular streaks within one layer of soil material transported from another layer. They are caused by the filling of tunnels made by burrowing animals.

**Ksat.** See Saturated hydraulic conductivity.

**Lacustrine deposit.** Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Lake plain.** A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

**Lake terrace.** A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

**Lamella.** A thin, discontinuous or continuous, generally horizontal layer of fine material (especially clay and iron oxides) that has been pedogenically concentrated (illuviated) within a coarser (e.g., sandy), eluviated layer.

**Landform.** Any physical, recognizable form or feature on the earth's surface that has a characteristic shape and range in composition and is produced by natural causes; it can span a wide range in size. Landforms provide an empirical description of similar portions of the earth's surface.

**Landscape (soils).** An assemblage, group, or family of spatially related, natural landforms over a relatively large area; the land surface which the eye can comprehend in a single view.

**Landslide.** A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

**Large stones** (in tables). Rock fragments 3 inches (7.6 centimeters) or more across.

Large stones adversely affect the specified use of the soil.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Leeward.** Being in or facing the direction toward which the wind is blowing.

**Limestone.** Sedimentary rock consisting mainly of calcium carbonate (CaCO<sub>3</sub>).

**Linear extensibility.** Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Lithic contact.** A boundary between soil and coherent underlying material, typically bedrock. The bedrock has a cementation class of strongly cemented or stronger and is typically referred to as an R horizon.

**Lithologic discontinuity.** A significant change in particle-size distribution or mineralogy that indicates a difference in the material from which the soil horizons have formed.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loamy-skeletal.** A particle-size class in which rock fragments 2 millimeters in diameter or larger make up 35 percent or more by volume. The fine-earth fraction is loamy.

**Loess.** Material transported and deposited by wind and consisting dominantly of silt-sized particles.

**Longshore drift.** Material (such as sand or gravel) that is moved parallel to and near a shore.

**Low strength.** The soil is not strong enough to support loads.

**Major Land Resource Area (MLRA).** A broad geographic land area characterized by a particular pattern of soils, geology, climate, water resources, and land use. An area is typically continuous, but small separate areas can occur.

**Mass movement.** A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

**Masses.** See Redoximorphic features.

**Mature forest stage.** A forest successional stage in which the most shade-tolerant adapted tree species are well represented (more than 50 percent composition) and are dominant in the middle to upper canopy layers. Trees generally are more than 9 inches in diameter at breast height, and the canopy cover is more than 25 percent.

**Meander belt.** The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

**Meander scar.** A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

**Meander scroll.** One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medial** (family particle-size class). A substitute class term used for the family particle-size class in mineral soils.

**Medial** (textural modifier, such as medial loam). A USDA textural modifier used in conjunction with a USDA mineral soil texture to indicate unique physical and chemical properties. The properties are defined in Soil Taxonomy and are typically low bulk density, high content of iron and aluminum, and high retention of phosphate.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Mesa.** A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

**Mesic.** A soil temperature regime in which the mean annual temperature at a depth of 20 inches ranges from 47 to 58 degrees F. The difference between the mean winter soil temperature and the mean summer soil temperature is more than 9 degrees F.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

**Metasedimentary rock.** A sedimentary rock that has been subject to metamorphic processes. The degree of metamorphic alteration is not implied by the term.

**Metavolcanic rock.** A volcanic rock that has been subject to metamorphic processes. The degree of metamorphic alteration is not implied by the term.

**Microclimate.** The climate of a small distinct area, as of a forest or city, or a confined space, as of a building or greenhouse.

**Mine spoil.** An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

- Miscellaneous area.** A kind of map unit component that has little or no natural soil and supports little or no vegetation.
- Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.
- Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.
- Moisture control section.** The layer within a soil profile used to determine the soil moisture regime. The upper boundary is the depth to which a dry soil is moistened by 1 inch of water in 24 hours. The lower boundary is the depth to which a dry soil is moistened by 3 inches of water in 48 hours.
- Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.
- Moraine.** In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common, and many*; size—*fine, medium, and coarse*; and contrast—*faint, distinct, and prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).
- Mountain.** A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.
- Mountain valleys.** Any small, externally drained depression floored with either till or alluvium, that occurs on a mountain or within mountains. (See intermontane basins.)
- Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- Mucky peat.** A USDA texture associated with organic soils that meet the degree of organic matter decomposition associated with hemic soil material.
- Mudstone.** A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.
- Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Natric horizon.** A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.
- Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- Nodules.** See Redoximorphic features.

**Nose slope** (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

**Ochric epipedon.** A surface horizon of mineral soil that is too light in color, too high in chroma, too low in organic carbon, or too thin to be a mollic, umbric, or histic epipedon.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low .....	less than 0.5 percent
Low .....	0.5 to 1.0 percent
Moderately low.....	1.0 to 2.0 percent
Moderate.....	2.0 to 4.0 percent
High .....	4.0 to 8.0 percent
Very high.....	more than 8.0 percent

**Orogenic.** Of or pertaining to the process of mountain formation.

**Outwash.** Stratified and sorted sediment (mainly sand and gravel) removed or "washed out" from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

**Outwash fan.** An accumulation of outwash material deposited by meltwater streams in front of the end or recessional moraine of a glacier.

**Outwash plain.** An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

**Outwash terrace.** A valley train deposit extending along a valley downstream from an outwash plain or terminal moraine; a flat-topped bank of outwash with an abrupt outer face.

**Overland flow.** Water that runs across the land after rainfall, either before it enters a watercourse or after it leaves a watercourse as floodwater or after it rises to the surface naturally from underground.

**Overstory.** The trees in a forest stand that form the upper crown cover. (See Understory.)

**Oxidation.** Any chemical reaction that removes electrons from a molecule or atom.

**Paleosol.** A soil that formed on a landscape in the past that has distinctive morphological features resulting from a soil-forming environment that no longer exists.

**Paleoterrace.** An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *duripan*, *placic horizon*, *plowpan*, and *traffic pan*.

**Paralithic contact.** A boundary between soil and coherent underlying material that can be dug with difficulty with a spade. It is referred to as weathered bedrock, has a cementation class of moderately cemented or weaker, and is typically referred to as a Cr horizon.

**Pararock fragments.** Fragments of rock that are 2 millimeters in diameter or more (e.g., paragrade, paracobble, or parastone). Pararock fragments have a moderately cemented to extremely weakly cemented rupture-resistance class.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Peat.** Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedisediment.** A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

**Pedogenesis.** The processes of formation and development of soils.

**Pedologic.** Of or pertaining to the processes of soil formation.

**Pedon.** The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The movement of water through the soil.

**Peridotite.** A coarse grained ultramafic rock consisting of olivine and pyroxene with accessory minerals. Peridotite is thought to make up much of the earth's mantle. It is referred to as serpentinite when altered.

**Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual" and in this glossary. Terms describing permeability, measured in inches per hour, are as follows:

Impermeable.....	less than 0.0015 inch
Very slow .....	0.0015 to 0.06 inch
Slow .....	0.06 to 0.2 inch
Moderately slow.....	0.2 to 0.6 inch
Moderate.....	0.6 inch to 2.0 inches
Moderately rapid.....	2.0 to 6.0 inches
Rapid .....	6.0 to 20 inches
Very rapid.....	more than 20 inches

See "Saturated hydraulic conductivity" for conversions of inches per hour to micrometers per second.

**Perudic.** A soil moisture regime common to a climate having moisture throughout the year. The soil moisture control section never becomes dry throughout its thickness during any time of the year.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

**Phyllite.** A fine-textured, foliated metamorphic rock that is intermediate in metamorphic grade between slate and schist. Mica crystals impart a silky sheen to the cleavage surfaces.

**Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Pitting** (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

**Placic horizon.** A thin (less than 1 inch thick), black to dark reddish colored horizon that is cemented by iron (or iron and manganese) and organic matter.

**Plant association.** A kind of climax plant community consisting of stands with essentially the same dominant species in corresponding layers.

**Plant community.** An assemblage of plants living together, reflecting no particular ecological status; a vegetative complex unique in its combination of plants.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plateau** (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

**Pleistocene.** The epoch of geologic time from approximately 10,000 to 2 million years ago. The earlier of the two epochs comprising the Quaternary period. Also called the Glacial epoch.

**Plinthite.** The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

**Pole stage.** A forest successional stage in which the vegetation of a stand is dominantly a moderately dense to very dense overstory of trees that have minimal vertical crown depth. The trees generally range from about 5 to 9 inches in diameter at breast height, and the canopy cover normally exceeds 35 percent.

**Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Pore linings.** See Redoximorphic features.

**Potential native plant community.** See Climax plant community.

**Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Puddling.** Compaction of the soil surface during wet periods to the point that the soil particles are rearranged to a massive state.

**Pumice.** A light-colored, vesicular, glassy pararock fragment. The fragments are more than 2 millimeters in diameter and commonly have the composition of rhyolite. Pumice commonly has a specific gravity of less than 1.0 and is thereby sufficiently buoyant to float on water.

**Pyroclastic.** Pertaining to fragmental material produced by commonly explosive, aerial ejection of clastic particles from a volcanic vent.

**Quartz diorite.** A coarse-grained igneous rock consisting mainly of plagioclase with smaller amounts of quartz, hornblende, and biotite. (See Granodiorite.)

**Quartz latite.** A fine-grained volcanic rock consisting mainly of quartz, plagioclase, and orthoclase with minor amounts of biotite and hornblende. Phenocrysts are common. This rock is the extrusive equivalent of quartz monzonite.

**Quartz monzonite.** A coarse-grained igneous rock consisting mainly of plagioclase, orthoclase, and quartz with minor amounts of biotite and hornblende. (See Granite and Granodiorite.)

**Quartzite.** A nonfoliated metamorphic rock consisting mainly of quartz sand cemented with quartz.

**Quaternary.** The period of the Cenozoic era of geologic time, extending from the end of the Tertiary (about 2 million years ago) to the present and comprising two epochs, the Pleistocene (Ice Age) and the Holocene (Recent).

**Rangeland.** Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid.....	less than 3.5
Extremely acid.....	3.5 to 4.4
Very strongly acid .....	4.5 to 5.0
Strongly acid.....	5.1 to 5.5
Moderately acid .....	5.6 to 6.0
Slightly acid.....	6.1 to 6.5
Neutral .....	6.6 to 7.3
Slightly alkaline.....	7.4 to 7.8
Moderately alkaline.....	7.9 to 8.4
Strongly alkaline .....	8.5 to 9.0
Very strongly alkaline.....	9.1 and higher

**Redoximorphic concentrations.** See Redoximorphic features.

**Redoximorphic depletions.** See Redoximorphic features.

**Redoximorphic features.** Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
  - A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
  - B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
  - C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chroma less than that of the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
  - A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
  - B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).

3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

**Reduced matrix.** See Redoximorphic features.

**Reduction.** Any chemical reaction in which there is uptake of an electron by a molecule or atom.

**Regolith.** All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

**Relief.** The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

**Restrictive feature.** A nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly reduce the movement of water and/or air through the soil or that otherwise provide an unfavorable root environment.

**Rhyodacite.** A fine-grained volcanic rock consisting mainly of quartz and feldspar, with more plagioclase than orthoclase. Phenocrysts are common. Ryodacite is the extrusive equivalent of granodiorite.

**Rill.** A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

**Riparian.** Refers to areas adjacent to water or wetlands; vegetation is dependent on water or use and management directly impacts the water or wetlands.

**Riser.** The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

**Riverwash.** Unstable areas of sandy, silty, clayey, gravelly, and cobbly sediment. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

**Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

**Rock fragments.** Rock or mineral fragments that are 2 millimeters in diameter or more (i.e., gravel, cobbles, stones, and boulders). Rock fragments have a strongly cemented or stronger rupture-resistance class.

**Rock outcrop.** Exposures of bare bedrock.

**Rubble land.** Areas that consist of cobbles, stones, and boulders, commonly at the base of mountains.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

**Saline soil.** A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Sandy.** A particle-size class in which the texture of the fine-earth fraction is sand or loamy sand but not loamy very fine sand or very fine sand; it is less than 35 percent rock fragments by volume.

**Sandy-skeletal.** A particle-size class that is 35 percent or more, by volume, rock fragments 2 millimeters in diameter or larger. The fine-earth fraction is sandy.

**Sapling/pole stage.** A forest successional stage in which the vegetation of a stand is dominantly saplings and pole-sized trees (generally 2 to 9 inches in diameter at breast height). The canopy cover and understory production are intermediate between the herbaceous or shrub stage and the pole stage.

**Sapric soil material (muck).** The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

**Saprolite.** Soft, friable bedrock that retains the fabric and structure of the parent rock while exhibiting weathering of crystals.

**Saturated hydraulic conductivity (Ksat).** The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are *very high*, 100 or more micrometers per second (14.17 or more inches per hour); *high*, 10 to 100 micrometers per second (1.417 to 14.17 inches per hour); *moderately high*, 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour); *moderately low*, 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour); *low*, 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour); and *very low*, less than 0.01 micrometer per second (less than 0.001417 inch per hour). To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

**Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

**Scarification.** The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

**Schist.** A medium- to coarse-grained foliated metamorphic rock in which the platy minerals are clearly visible. Micaceous minerals commonly are present.

**Secondary carbonates and silica.** Calcium carbonate and silica weathered from the soil matrix in the upper part of the soil and then transported and deposited in the lower part by water moving through the soil profile.

**Sedimentary rock.** A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

**Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

**Seral.** Refers to the relative transitory aggregation of plants and animals within a sere; a preclimax stage of succession.

**Seral species.** A species associated with the early or middle stages of ecological succession.

**Seral stand.** A vegetative community composed of seral species.

**Sere.** The stages in an ecological succession.

- Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.
- Serpentine.** A greenish, greenish yellow, or greenish gray mineral that is composed of a complex group of hydrous magnesium silicates.
- Shale.** Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.
- Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
- Shoulder.** The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.
- Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
- Side slope** (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.
- Silica.** A combination of silicon and oxygen. The mineral form is called quartz.
- Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.
- Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- Siltstone.** An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.
- Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.
- Slate.** A fine-grained metamorphic rock that exhibits strong cleavage or layering.
- Slickensides** (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.
- Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.
- Slow refill** (in tables). The slow filling of ponds, resulting from restricted water transmission in the soil.
- Slow water movement** (in tables). Restricted downward movement of water through the soil. (See Saturated hydraulic conductivity.)
- Slump.** A mass movement process characterized by a landslide involving shearing and rotary movement of a generally independent mass of rock or earth along a curved slip surface. The mass (slump) has its axis parallel to the slope from which it descends. A slump surface commonly exhibits a reversed slope facing uphill.

**Sodic (alkali) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Sodicity.** The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of  $\text{Na}^+$  to  $\text{Ca}^{++} + \text{Mg}^{++}$ . The degrees of sodicity and their respective ratios are:

Slight.....	less than 13:1
Moderate.....	13-30:1
Strong .....	more than 30:1

**Sodium adsorption ratio (SAR).** A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

**Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand.....	2.0 to 1.0
Coarse sand .....	1.0 to 0.5
Medium sand .....	0.5 to 0.25
Fine sand.....	0.25 to 0.10
Very fine sand.....	0.10 to 0.05
Silt .....	0.05 to 0.002
Clay.....	less than 0.002

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

**Spodic horizon.** An illuvial horizon that is 85 percent or more spodic material. This layer is dominated by active amorphous material that is illuvial and is composed of organic matter and aluminum, with or without iron.

**Stone line.** In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

**Stoniness (or boulderiness).** The relative proportion of larger rock fragments on the surface layer. Used as map unit phase designation for soils containing sufficient amounts of stones and boulders to impose important restrictions on use and management. These phases should not be confused with the use of fragments as textural modifiers. The four phases recognized in this survey are:

*Stony (or bouldery).*—The areas have enough stones and boulders at or near the surface to be a continuing nuisance during operations that mix the surface layer, but they do not make most such operations impractical. Conventional, wheeled

vehicles can move with reasonable freedom over the area. Rocks may damage both the equipment that mixes the soil and the vehicles that move on the surface. Large rock fragments cover about 0.01 to 0.1 percent of the surface.

**Very stony (or very bouldery).**—The areas have so many stones and boulders at or near the surface that operations that mix the surface layer either require heavy equipment or use of implements that can operate between the larger ones. Tillage with conventionally powered farm equipment is impractical. Wheeled tractors and vehicles with high clearance can operate on carefully chosen routes over and around stones and boulders. Large rock fragments cover about 0.1 to 3 percent of the surface.

**Extremely stony (or extremely bouldery).**—The areas have so many stones and boulders at or near the surface that wheeled powered equipment, other than some special types, can operate only along selected routes. Tracked vehicles can be used in most places, although some routes have to be cleared. Large rock fragments cover about 3 to 15 percent of the surface.

**Rubbly and very rubbly.**—The areas have so many stones and boulders at or near the surface that tracked vehicles cannot be used in most places. Large rock fragments cover about 15 to 90 percent of the surface.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Strath terrace.** A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

**Stream terrace.** One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. Originally formed near the level of the stream. Represents the remnants of an abandoned flood plain, streambed, or valley floor produced during a former state of fluvial erosion or deposition.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Subaqueous.** Refers to conditions and processes, features, or deposits that exist in or under water, especially fresh water, as in a lake or stream.

**Subduction.** The process of one lithospheric plate descending beneath another.

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Technically, the E horizon. Generally refers to a leached horizon that is lighter in color and lower in content of organic matter than the overlying surface layer.

**Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

**Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

**Tailings.** Areas of washed ore left in uneven piles after placer mining activities such as sluicing, hydraulicing, or dredging.

**Talus.** Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

**Tectonic.** Pertaining to the forces involved in, or the resulting structures of, deformation of the earth's crust.

**Tephra.** A collective term for all clastic volcanic material that is ejected from a vent during an eruption and transported through the air. It includes ash, blocks, cinders, lapilli, scoria, and pumice.

**Terminal moraine.** An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

**Terrace** (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

**Terrace**. (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

**Terracettes.** Small, irregular steplike forms on steep hillslopes formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of wildlife.

**Terrane.** A group of related rocks and the area in which they are exposed at the earth's surface.

**Tertiary.** The period of geologic time from approximately 2 to 63 million years ago (radiometric dates). The earlier of the two geologic periods comprising the Cenozoic era.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.

**Thrust fault.** A fault with a dip of 45 degrees or less on which the hanging wall appears to have moved upward relative to the footwall.

**Till.** Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

**Till plain.** An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

- Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- Toeslope.** The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.
- Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.
- Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.
- Tread.** The flat to gently sloping, topmost, laterally extensive slope of terraces, floodplain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.
- Tuff.** A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.
- Udic.** A soil moisture regime common to a climate that has moisture throughout the year. The soil moisture control section is dry for less than 45 consecutive days during the 4 months following the summer solstice.
- Ultramafic rock.** Rock that has a relatively high content of iron, is less than 45 percent silica, and has virtually no quartz or feldspar. It includes peridotite and serpentinite.
- Umbric epipedon.** A thick, dark-colored, humus-rich surface horizon that has low base saturation and pedogenic soil structure. It may include the upper part of the subsoil.
- Understory.** Plants in a forest community that grow to a height of 4.5 feet or less.
- Upland.** An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.
- Valley fill.** The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.
- Variegation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.
- Varve.** A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.
- Water bars.** Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.
- Weathering.** All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.
- Welded tuff.** A glass-rich rock that has been indurated by the welding together of its glass shards under the combined action of the heat retained by particles, the weight of overlying material, and hot gasses.
- Well graded.** Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

**Wilting point (or permanent wilting point).** The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

**Windthrow.** The uprooting and tipping over of trees by the wind.

**Xeric.** A soil moisture regime common to a climate having moist winters and dry summers. The soils are dry in the moisture control section for more than 45 consecutive days during the 4 months following the summer solstice and are moist for more than 45 consecutive days during the 4 months following the winter solstice.

**Young forest stage.** A forest successional stage in which the overstory vegetation of a stand is dominantly shade-intolerant successional trees. Trees generally are more than 9 inches in diameter at breast height, and the canopy cover exceeds 25 percent. Shade-tolerant climax tree species can be absent to nearly well represented (less than 50 percent).

# **Tables**

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Soil Survey of Mount Rainier National Park, Washington

**Table 1.--Temperature and Precipitation**

(Recorded at Carbon River Entrance [515 meters elevation]  
during the period 1906-1974.)

Month	Temperature (degrees C)			Average precipitation (millimeters)
	Average daily maximum	Average daily minimum	Average	
January----	3.8	-1.6	1.1	204.98
February---	5.3	-1.1	2.3	165.61
March-----	7.4	0.1	3.8	167.64
April-----	11.6	1.4	6.4	134.37
May-----	16.2	4.3	10.2	117.09
June-----	18.7	7.1	12.8	118.36
July-----	22.0	8.7	15.3	43.94
August-----	21.4	8.8	15.1	52.58
September--	17.5	7.1	12.3	102.11
October----	11.7	4.1	8.1	171.45
November---	7.3	1.3	-12.4	210.82
December---	4.8	-0.3	2.2	252.48
Yearly----	12.2	3.3	7.8	
Total-----				1,742.44

(Recorded at Longmire [850 meters elevation] during the period 1981-2010.)

Month	Temperature (degrees C)			Average precipitation (millimeters)
	Average daily maximum	Average daily minimum	Average	
January----	2.9	-2.8	-0.4	274.83
February---	4.8	-2.6	0.5	215.14
March-----	7.5	-1.4	2.5	185.93
April-----	10.4	0.1	4.7	149.35
May-----	14.8	3.1	8.4	127.51
June-----	18.7	6.0	11.8	96.27
July-----	24.7	8.3	15.3	42.67
August-----	23.6	8.3	15.6	43.43
September--	19.8	5.7	13.0	92.71
October----	13.0	2.3	7.0	202.44
November---	4.9	-1.3	1.8	327.66
December---	2.3	-3.1	-1.0	292.86
Yearly----	12.3	1.9	6.6	
Total-----				2,050.80

Soil Survey of Mount Rainier National Park, Washington

**Table 1.--Temperature and Precipitation--Continued**  
 (Recorded at Paradise [1,640 meters elevation] during the  
 period 1981-2010.)

Month	Temperature (degrees C)			Average precipitation (millimeters)
	Average daily maximum	Average daily minimum	Average	
January----	1.6	-5.3	-1.8	463.30
February---	2.1	-5.5	-1.7	322.33
March-----	3.3	-4.6	-0.7	319.02
April-----	5.6	-3.4	1.1	210.82
May-----	9.6	-0.1	4.7	149.61
June-----	12.6	2.3	7.5	104.39
July-----	17.4	5.9	11.7	49.53
August-----	18.1	6.6	12.3	50.04
September--	14.5	4.3	9.4	119.63
October----	8.8	0.2	4.5	264.92
November---	2.9	-4.1	-0.6	515.11
December---	1.0	-6.1	-2.6	436.12
Yearly-----	8.2	-0.8	3.7	
Total-----				3,004.82

Soil Survey of Mount Rainier National Park, Washington

**Table 2.--Taxonomic Classification of the Soils**

Soil name	Family or higher taxonomic class
Arahustan-----	Ashy, amorphic Andic Haplocryods
Burroughs-----	Medial, glassy Humic Vitricryands
Carbon-----	Ashy, glassy, frigid Aquandic Humudepts
Chenuis-----	Medial-skeletal, glassy Humic Vitricryands
Comet-----	Ashy-skeletal, glassy, frigid Vitrandic Humudepts
Flett-----	Ashy-skeletal, glassy Vitrandic Dystrocryepts
Frogheaven-----	Ashy, amorphic, acid Typic Cryaquands
Ghost-----	Euic Fluvaquentic Cryosaprists
Glacierisland-----	Ashy-skeletal, glassy Typic Vitricryands
Goldenlakes-----	Ashy, amorphic, frigid Andic Haplorthods
Ingraham-----	Ashy, amorphic, frigid Lithic Haplorthods
Ipsut-----	Medial, glassy Lithic Haplocryods
Kautz-----	Ashy, amorphic, frigid Andic Haplorthods
Laughingwater-----	Ashy, amorphic Aquandic Haplocryods
Littleahoma-----	Medial, glassy Humic Vitricryands
Longmire-----	Ashy, amorphic Andic Haplocryods
Meany-----	Medial-skeletal, glassy, nonacid Typic Cryaquands
Mountwow-----	Medial, glassy, acid Thaptic Cryaquands
Mysticlake-----	Medial, glassy, acid Typic Cryaquands
Narada-----	Ashy, glassy Aquandic Dystrocryepts
Ohanapecoh-----	Ashy, amorphic Lithic Haplocryods
Owyhigh-----	Medial, glassy Andic Haplocryods
Sarvant-----	Medial-skeletal, glassy Humic Vitricryands
Sheepskull-----	Ashy-skeletal, glassy Typic Vitricryands
Sluiskin-----	Ashy-skeletal, glassy Lithic Vitricryands
Summerland-----	Ashy-skeletal, amorphic Humic Vitricryands
Sunbeam-----	Ashy, amorphic, nonacid, frigid Typic Vitraquands
Tamanos-----	Ashy-skeletal, glassy, nonacid, subgelic Glacic Haplorthels
Tatoosh-----	Medial, glassy Lithic Vitricryands
Tipsoo-----	Medial, glassy Andic Haplocryods
Tokaloo-----	Ashy, amorphic, nonacid, frigid Typic Vitraquands
Unicornpeak-----	Medial, glassy Aquandic Haplocryods
Vantrump-----	Ashy, amorphic, acid Typic Cryaquands
Wahpenayo-----	Medial, glassy, acid Typic Cryaquands
Williwakas-----	Medial, glassy, acid Typic Cryaquands
Wonderland-----	Ashy-skeletal, glassy, nonacid Typic Cryaquands

Soil Survey of Mount Rainier National Park, Washington

**Table 3.--Acres/Hectares and Proportionate Extent of the Map Units**

Map symbol	Map unit name	Acres	Hectares	Percent
6100	Riverwash-Comet complex, 0 to 15 percent slopes-----	404	163	0.2
6101	Comet-Carbon complex, 0 to 20 percent slopes-----	276	112	0.1
6110	Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes-----	401	162	0.2
6120	Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes-----	331	134	0.1
6125	Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes-----	254	103	0.1
7100	Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes-----	109	44	*
7110	Kautz-Goldenlakes complex, 35 to 100 percent slopes-----	1,239	501	0.5
7120	Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes-----	655	265	0.3
7125	Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes-----	834	338	0.4
8100	Riverwash-Flett complex, 0 to 25 percent slopes-----	3,675	1,487	1.6
8101	Flett-Narada complex, 0 to 25 percent slopes-----	4,312	1,745	1.8
8110	Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes-----	3,221	1,303	1.4
8120	Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes-----	6,745	2,730	2.9
8125	Vantrump-Laughingwater-Longmire complex, 10 to 65 percent slopes-----	1,204	487	0.5
8130	Summerland-Longmire complex, 15 to 100 percent slopes-----	3,459	1,400	1.5
8150	Ghost-Frogheaven complex, 0 to 10 percent slopes-----	86	35	*
8200	Riverwash-Flett, cold complex, 5 to 50 percent slopes-----	651	263	0.3
8201	Mysticlake-Unicornpeak-Williwakas complex, 0 to 40 percent slopes-----	719	291	0.3
8203	Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes-----	2,802	1,134	1.2
8210	Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes-----	2,517	1,019	1.1
8211	Owyhigh-Mysticlake-Williwakas complex, 0 to 50 percent slopes-----	1,322	535	0.6
8220	Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes-----	5,896	2,386	2.5
8225	Mysticlake-Unicornpeak-Tipsoo complex, 10 to 55 percent slopes-----	2,243	908	1.0
8230	Summerland-Tipsoo complex, 15 to 100 percent slopes-----	4,806	1,945	2.0
8250	Ghost-Williwakas-Mountwow, moist complex, 0 to 20 percent slopes-----	425	172	0.2
8251	Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes-----	1,098	444	0.5
8252	Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes-----	1,028	416	0.4
8255	Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes-----	333	135	0.1
8256	Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes-----	2,337	946	1.0
8257	Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes-----	3,052	1,235	1.3
9100	Arahustan-Ohanapecosh-Longmire complex, 15 to 100 percent slopes-----	2,480	1,004	1.1
9101	Ohanapecosh-Arahustan-Summerland complex, 20 to 100 percent slopes-----	3,814	1,543	1.6
9110	Longmire-Arahustan complex, 35 to 100 percent slopes-----	22,935	9,282	9.7
9120	Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes-----	10,744	4,348	4.6
9125	Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes-----	4,320	1,748	1.8
9200	Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes-----	6,624	2,681	2.8
9201	Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes-----	10,591	4,286	4.5
9210	Tipsoo-Owyhigh complex, 35 to 100 percent slopes-----	20,897	8,457	8.9
9220	Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes-----	8,964	3,628	3.8
9225	Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes-----	4,647	1,881	2.0
9250	Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes-----	1,286	520	0.5
9251	Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes-----	5,824	2,357	2.5
9252	Littletahoma-Burroughs-Mountwow, moist complex, 20 to 100 percent slopes-----	1,853	750	0.8
9253	Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes-----	2,394	969	1.0
9254	Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes-----	427	173	0.2

Soil Survey of Mount Rainier National Park, Washington

Table 3.--Acres/Hectares and Proportionate Extent of the Map Units--Continued

Map symbol	Map unit name	Acres	Hectares	Percent
9255	Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes-----	7,623	3,085	3.2
9256	Chenuis-Sarvant complex, 25 to 100 percent slopes-----	6,200	2,509	2.6
9257	Littletahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes-----	2,650	1,072	1.1
9258	Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes-----	1,793	726	0.8
9259	Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes-----	1,834	742	0.8
9260	Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes-----	982	397	0.4
9261	Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes-----	1,926	779	0.8
9262	Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes-----	4,244	1,717	1.8
9263	Tamanos-Glaciers complex, 10 to 65 percent slopes-----	2,684	1,086	1.1
9993	Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes-----	9,003	3,643	3.8
9994	Rubbleland, till-Glacierisland-Wonderland complex, 15 to 100 percent slopes-----	4,006	1,621	1.7
9996	Glaciers-Rock outcrop complex, 15 to 100 percent slopes-----	27,548	11,148	11.7
W	Water-----	592	240	0.3
	Total-----	235,319	95,231	100.0

\*Less than 0.1 percent.

Soil Survey of Mount Rainier National Park, Washington

**Table 4.--Detailed Soil Map Unit Legend**

National symbol	Map symbol	Soil name
2rf4x	6100	Riverwash-Comet complex, 0 to 15 percent slopes
2rf4y	6101	Comet-Carbon complex, 0 to 20 percent slopes
2s106	6110	Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes
2s107	6120	Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes
2t0fr	6125	Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes
2s108	7100	Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes
2s10b	7110	Kautz-Goldenlakes complex, 35 to 100 percent slopes
2s10c	7120	Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes
2t0fs	7125	Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes
2s10d	8100	Riverwash-Flett complex, 0 to 25 percent slopes
2s10f	8101	Flett-Narada complex, 0 to 25 percent slopes
2s10g	8110	Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes
2s10h	8120	Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes
2t0g2	8125	Vantrump-Laughingwater-Longmire complex, 10 to 65 percent slopes
2t0ff	8130	Summerland-Longmire complex, 15 to 100 percent slopes
2s112	8150	Ghost-Frogheaven complex, 0 to 10 percent slopes
2s10p	8200	Riverwash-Flett, cold complex, 5 to 50 percent slopes
2s10q	8201	Mysticlake-Unicornpeak-Williwakas complex, 0 to 40 percent slopes
2t0ft	8203	Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes
2t0fh	8210	Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes
2t0fv	8211	Owyhigh-Mysticlake-Williwakas complex, 0 to 50 percent slopes
2t0fj	8220	Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes
2t0g3	8225	Mysticlake-Unicornpeak-Tipsoo complex, 10 to 55 percent slopes
2t0fk	8230	Summerland-Tipsoo complex, 15 to 100 percent slopes
2s10r	8250	Ghost-Williwakas-Mountwow, moist complex, 0 to 20 percent slopes
2t0f1	8251	Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes
2t0fw	8252	Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes
2t0g5	8255	Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes
2t0g6	8256	Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes
2t0g7	8257	Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes
2s10j	9100	Arahustan-Ohanapecosh-Longmire complex, 15 to 100 percent slopes
2s10k	9101	Ohanapecosh-Arahustan-Summerland complex, 20 to 100 percent slopes
2s10l	9110	Longmire-Arahustan complex, 35 to 100 percent slopes
2s10m	9120	Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes
2s10n	9125	Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes
2s10s	9200	Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes
2s10t	9201	Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes
2s10v	9210	Tipsoo-Owyhigh complex, 35 to 100 percent slopes
2s10w	9220	Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes
2t0g4	9225	Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes
2s10x	9250	Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes
2s10y	9251	Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes
2t0fm	9252	Littletahoma-Burroughs-Mountwow, moist complex, 20 to 100 percent slopes
2t0fn	9253	Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes
2t0fx	9254	Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes
2t0fp	9255	Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes
2t0fq	9256	Chenuis-Sarvant complex, 25 to 100 percent slopes
2t0fy	9257	Littletahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes
2t0fz	9258	Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes
2t0g0	9259	Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes
2t0fd	9260	Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes
2t0g1	9261	Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes
2t0fc	9262	Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes
2s110	9263	Tamanos-Glaciers complex, 10 to 65 percent slopes
2t0fb	9993	Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes
2s111	9994	Rubbleland, till-Glacierisland-Wonderland complex, 15 to 100 percent slopes
2s10z	9996	Glaciers-Rock outcrop complex, 15 to 100 percent slopes
2s114	W	Water

Soil Survey of Mount Rainier National Park, Washington

**Table 5.--Component Legend**

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
6100: Riverwash-Comet complex, 0 to 15 percent slopes-----	Riverwash	80	0	8	15
	Comet	15	0	5	15
	Water	5	0	0	0
6101: Comet-Carbon complex, 0 to 20 percent slopes-----	Comet	50	0	10	20
	Carbon	35	0	5	20
	Sunbeam	10	0	3	10
	Riverwash	5	0	20	35
6110: Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes-----	Tokaloo	55	0	10	20
	Kautz	25	0	15	20
	Sunbeam	20	0	5	10
6120: Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes-----	Kautz	45	5	20	35
	Tokaloo	35	5	10	35
	Sunbeam	15	5	8	10
	Goldenlakes	5	5	20	35
6125: Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes--	Tokaloo	35	0	20	35
	Kautz	30	0	35	65
	Goldenlakes	20	0	35	65
	Sunbeam	10	0	5	10
	Ingraham	5	0	35	65
7100: Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes-----	Goldenlakes	50	35	70	100
	Ingraham	30	35	70	100
	Kautz	15	35	70	100
	Rock outcrop	5	35	70	100
7110: Kautz-Goldenlakes complex, 35 to 100 percent slopes-----	Kautz	40	35	70	100
	Goldenlakes	35	35	70	100
	Tokaloo	10	5	15	35
	Ingraham	5	35	70	100
	Rock outcrop	5	35	70	100
	Sunbeam	5	0	5	10
7120: Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes	Kautz	50	25	35	65
	Tokaloo	25	25	35	50
	Goldenlakes	15	25	35	65
	Ingraham	5	25	35	65
	Sunbeam	5	0	5	10
7125: Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes-----	Goldenlakes	40	20	45	65
	Kautz	30	20	45	65
	Ingraham	15	20	45	65
	Tokaloo	10	5	15	25
	Sunbeam	5	0	5	10

Soil Survey of Mount Rainier National Park, Washington

Table 5.--Component Legend--Continued

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
8100:					
Riverwash-Flett complex, 0 to 25 percent slopes-----	Riverwash	60	0	15	25
	Flett	25	0	15	25
	Narada	10	0	5	10
	Water	5	0	0	0
8101:					
Flett-Narada complex, 0 to 25 percent slopes-----	Flett	50	0	15	25
	Narada	35	0	15	25
	Frogheaven	10	0	5	10
	Riverwash	5	0	2	35
8110:					
Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes-----	Vantrump	40	0	20	35
	Laughingwater	30	0	20	35
	Longmire	15	0	20	35
	Frogheaven	10	0	5	10
	Ghost, warm	5	0	2	5
8120:					
Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes-----	Longmire	35	5	30	65
	Laughingwater	30	5	25	65
	Vantrump	20	5	15	35
	Frogheaven	10	0	5	10
	Arahustan	5	5	30	65
8125:					
Vantrump-Laughingwater-Longmire complex, 10 to 65 percent slopes-----	Vantrump	35	10	35	65
	Laughingwater	25	10	35	65
	Longmire	20	10	35	65
	Arahustan	10	10	35	65
	Frogheaven	5	0	5	10
	Ohanapecosh	5	10	35	65
8130:					
Summerland-Longmire complex, 15 to 100 percent slopes-----	Summerland	70	15	65	100
	Longmire	15	15	65	100
	Vantrump	10	5	15	35
	Frogheaven	5	0	5	10
8150:					
Ghost-Frogheaven complex, 0 to 10 percent slopes-----	Ghost, warm	45	0	2	5
	Frogheaven	30	0	5	10
	Laughingwater	10	2	5	10
	Vantrump	10	0	5	10
	Water	5	0	0	0
8200:					
Riverwash-Flett, cold complex, 5 to 50 percent slopes-----	Riverwash	80	5	25	50
	Flett, cold	15	5	20	35
	Water	5	0	0	0
8201:					
Mysticlake-Unicornpeak-Williwakas complex, 0 to 40 percent slopes-----	Mysticlake	50	5	20	40
	Unicornpeak	25	5	20	40
	Williwakas	15	0	5	10
	Ghost	5	0	2	5
	Owyhigh	5	5	20	40

Soil Survey of Mount Rainier National Park, Washington

Table 5.--Component Legend--Continued

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
8203: Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes-----	Glacierisland	55	10	50	100
	Sheepskull	20	10	50	100
	Sluiskin	15	10	50	100
	Wonderland	10	5	15	35
8210: Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes-----	Mysticlake	45	5	20	40
	Unicornpeak	30	5	20	40
	Tipsoo	15	5	20	40
	Ghost	10	0	2	5
8211: Owyhigh-Mysticlake-Williwakas complex, 0 to 50 percent slopes-----	Owyhigh	50	10	30	50
	Mysticlake	25	10	30	40
	Williwakas	15	0	5	10
	Ipsut	5	10	30	50
	Mountwow	5	5	10	15
8220: Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes-----	Tipsoo	35	10	35	55
	Unicornpeak	30	10	35	55
	Mysticlake	20	10	35	55
	Williwakas	10	0	5	10
	Owyhigh	5	10	35	55
8225: Mysticlake-Unicornpeak-Tipsoo complex, 10 to 55 percent slopes-----	Mysticlake	35	10	30	55
	Unicornpeak	25	10	30	55
	Tipsoo	20	10	30	55
	Owyhigh	10	10	30	55
	Ipsut	5	10	30	55
	Williwakas	5	0	5	10
8230: Summerland-Tipsoo complex, 15 to 100 percent slopes-----	Summerland, cold	70	15	65	100
	Tipsoo	15	15	65	100
	Wonderland	10	5	15	35
	Glacierisland	5	15	65	100
8250: Ghost-Williwakas-Mountwow, moist complex, 0 to 20 percent slopes-----	Ghost	35	0	2	10
	Williwakas	30	0	5	10
	Mountwow, moist	20	0	10	20
	Unicornpeak	10	0	10	20
	Water	5	0	0	0
8251: Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes-----	Mountwow, moist	50	5	20	40
	Williwakas	25	0	5	10
	Unicornpeak	15	5	20	40
	Ghost	10	0	2	5

Soil Survey of Mount Rainier National Park, Washington

Table 5.--Component Legend--Continued

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
8252: Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes-----	Mountwow, moist	45	5	30	55
	Unicornpeak	20	5	30	55
	Williwakas	15	0	5	10
	Owyhigh	10	5	30	55
	Rock outcrop	10	5	30	55
8255: Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes--	Ghost	35	0	2	10
	Williwakas	30	0	5	10
	Mountwow	20	0	10	20
	Unicornpeak	10	0	10	20
	Water	5	0	0	0
8256: Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes-----	Mountwow	50	0	15	30
	Williwakas	20	0	5	10
	Unicornpeak	15	5	15	30
	Wahpenayo	10	5	15	30
	Ghost	5	0	2	5
8257: Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes-----	Wahpenayo	40	10	30	45
	Mountwow	25	10	30	45
	Williwakas	15	0	5	10
	Owyhigh	10	10	30	45
	Unicornpeak	10	10	30	45
9100: Arahustan-Ohanapecosh-Longmire complex, 15 to 100 percent slopes-----	Arahustan	50	15	50	100
	Ohanapecosh	25	15	50	100
	Longmire	15	15	50	100
	Rock outcrop	5	15	50	100
	Vantrump	5	5	10	20
9101: Ohanapecoh-Arahustan-Summerland complex, 20 to 100 percent slopes-----	Ohanapecoh	50	20	80	100
	Arahustan	25	20	65	100
	Summerland	15	20	65	100
	Rock outcrop	5	20	80	100
	Rubbleland, talus	5	20	65	100
9110: Longmire-Arahustan complex, 35 to 100 percent slopes-----	Longmire	45	35	65	100
	Arahustan	35	35	65	100
	Frogheaven	5	0	5	10
	Ohanapecoh	5	35	65	100
	Rock outcrop	5	35	65	100
	Vantrump	5	5	15	35

Soil Survey of Mount Rainier National Park, Washington

Table 5.--Component Legend--Continued

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
9120: Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes-----	Longmire	45	20	45	65
	Arahustan	25	20	45	65
	Vantrump	20	20	25	35
	Frogheaven	5	0	5	10
	Ohanapecosh	5	20	45	65
9125: Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes-----	Longmire	40	15	40	65
	Arahustan	25	15	40	65
	Ohanapecosh	15	15	40	65
	Vantrump	10	0	10	25
	Frogheaven	5	0	3	5
	Laughingwater	5	5	15	30
9200: Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes-----	Owyhigh	50	25	65	100
	Ipsut	25	25	65	100
	Tipsoo	15	25	65	100
	Rock outcrop	5	25	65	100
	Unicornpeak	5	10	15	30
9201: Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes-----	Sluiskin	40	25	80	100
	Owyhigh	25	25	65	100
	Summerland, cold	15	25	65	100
	Rock outcrop	10	25	80	100
	Rubbleland, talus	10	25	80	100
9210: Tipsoo-Owyhigh complex, 35 to 100 percent slopes-----	Tipsoo	45	35	65	100
	Owyhigh	35	35	65	100
	Ipsut	5	35	65	100
	Mysticlake	5	5	15	35
	Rock outcrop	5	35	65	100
	Williwakas	5	0	5	10
9220: Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes	Tipsoo	45	20	45	65
	Owyhigh	25	20	45	65
	Mysticlake	20	20	35	55
	Ipsut	5	20	45	65
	Williwakas	5	0	5	10
9225: Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes-----	Owyhigh	40	15	45	65
	Tipsoo	25	15	45	65
	Ipsut	15	15	45	65
	Mysticlake	10	5	15	35
	Unicornpeak	5	5	15	35
	Williwakas	5	0	5	10

Soil Survey of Mount Rainier National Park, Washington

Table 5.--Component Legend--Continued

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
9250:					
Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes-----	Burroughs, moist	45	15	50	100
	Littletahoma, moist	20	15	50	100
	Tatoosh, moist	20	15	50	100
	Mountwow, moist	10	5	15	35
	Rock outcrop	5	15	50	100
9251:					
Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes-----	Sarvant, moist	45	20	75	100
	Chenuis, moist	25	20	75	100
	Tatoosh, moist	20	20	75	100
	Rock outcrop	5	20	75	100
	Rubbleland, talus	5	20	75	100
9252:					
Littletahoma-Burroughs-Mountwow, moist complex, 20 to 100 percent slopes-----	Littletahoma, moist	40	25	60	100
	Burroughs, moist	25	25	60	100
	Mountwow, moist	15	20	35	50
	Tatoosh, moist	10	25	60	100
	Rock outcrop	5	25	60	100
	Unicornpeak	5	25	35	65
9253:					
Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes-----	Mountwow, moist	40	10	25	50
	Littletahoma, moist	30	10	35	65
	Unicornpeak	15	10	35	65
	Burroughs, moist	10	10	35	65
	Williwakas	5	0	5	10
9254:					
Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes-----	Chenuis, moist	40	10	50	65
	Sarvant, moist	25	10	50	65
	Mountwow, moist	15	10	25	50
	Unicornpeak	10	10	35	65
	Tatoosh, moist	5	10	50	65
	Williwakas	5	0	5	10
9255:					
Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes-----	Burroughs	50	30	55	100
	Littletahoma	20	30	55	100
	Tatoosh	15	15	50	100
	Mountwow	10	5	15	35
	Rock outcrop	5	30	55	100

Soil Survey of Mount Rainier National Park, Washington

Table 5.--Component Legend--Continued

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
9256: Chenuis-Sarvant complex, 25 to 100 percent slopes-----	Chenuis	50	25	75	100
	Sarvant	30	25	75	100
	Tatoosh	10	25	75	100
	Rock outcrop	5	25	75	100
	Rubbleland, talus	5	25	65	100
9257: Littletahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes-----	Littletahoma	50	25	55	100
	Burroughs	20	25	55	100
	Mountwow	15	15	35	50
	Tatoosh	10	25	55	100
	Rock outcrop	5	25	55	100
9258: Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes-----	Mountwow	35	15	25	50
	Littletahoma	25	15	35	55
	Wahpenayo	15	15	25	55
	Burroughs	10	15	35	55
	Unicornpeak	10	15	35	55
	Williwakas	5	0	5	10
9259: Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes--	Chenuis	40	15	50	65
	Sarvant	25	15	50	65
	Mountwow	15	10	25	50
	Unicornpeak	10	15	35	65
	Tatoosh	5	15	50	65
	Williwakas	5	0	5	10
9260: Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes-----	Mountwow, alpine	45	5	25	50
	Chenuis, alpine	20	5	35	50
	Meany	15	5	15	25
	Riverwash	10	5	25	50
	Wahpenayo, alpine	10	5	25	50
9261: Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes-----	Wahpenayo, alpine	45	5	30	55
	Burroughs, alpine	20	5	35	55
	Mountwow, alpine	15	5	30	50
	Chenuis, alpine	10	5	35	55
	Meany	10	5	15	25

Soil Survey of Mount Rainier National Park, Washington

Table 5.--Component Legend--Continued

Map unit symbol and name	Component name	Pct. of map unit	Percent slope		
			Low	RV	High
9262: Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes-----	Sarvant, alpine Wahpenayo, alpine Mountwow, alpine Chenuis, alpine Rock outcrop Tatoosh, alpine	40 25 15 10 5 5	15 15 15 15 35 35	50 35 35 50 50 50	100 50 50 100 100 100
9263: Tamanos-Glaciers complex, 10 to 65 percent slopes-----	Tamanos Glaciers	80 20	10 10	35 35	65 65
9993: Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes-----	Rubbleland, talus Rock outcrop Sluiskin Summerland, cold	50 35 10 5	15 15 15 15	80 80 65 65	100 100 100 100
9994: Rubbleland, till-Glacierisland-Wonderland complex, 15 to 100 percent slopes-----	Rubbleland, till Glacierisland Wonderland Sheepskull	50 25 15 10	15 15 15 15	65 65 25 65	100 100 50 100
9996: Glaciers-Rock outcrop complex, 15 to 100 percent slopes----	Glaciers Rock outcrop Tatoosh, volcanic cone	45 45 10	15 35 15	80 80 65	100 100 100
W: Water-----	Water	100	0	0	0

Soil Survey of Mount Rainier National Park, Washington

**Table 6.--Land Capability Classification**

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
6100: Riverwash-----	8	---
Comet-----	4s	---
Water-----	8	---
6101: Comet-----	4e	---
Carbon-----	4e	---
Sunbeam-----	6w	---
Riverwash-----	8	---
6110: Tokaloo-----	6w	---
Kautz-----	4e	---
Sunbeam-----	6w	---
6120: Kautz-----	6e	---
Tokaloo-----	6e	---
Sunbeam-----	6w	---
Goldenlakes-----	6e	---
6125: Tokaloo-----	6e	---
Kautz-----	7e	---
Goldenlakes-----	7e	---
Sunbeam-----	6w	---
Ingraham-----	7e	---
7100: Goldenlakes-----	7e	---
Ingraham-----	7e	---
Kautz-----	7e	---
Rock outcrop-----	8	---
7110: Kautz-----	7e	---
Goldenlakes-----	7e	---
Tokaloo-----	6e	---
Ingraham-----	7e	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
7110:		
Rock outcrop-----	8	---
Sunbeam-----	6w	---
7120:		
Kautz-----	7e	---
Tokaloo-----	7e	---
Goldenlakes-----	7e	---
Ingraham-----	7e	---
Sunbeam-----	6w	---
7125:		
Goldenlakes-----	7e	---
Kautz-----	7e	---
Ingraham-----	7e	---
Tokaloo-----	6w	---
Sunbeam-----	6w	---
8100:		
Riverwash-----	8	---
Flett-----	6s	---
Narada-----	6c	---
Water-----	8	---
8101:		
Flett-----	6s	---
Narada-----	6c	---
Frogheaven-----	6w	---
Riverwash-----	8	---
8110:		
Vantrump-----	6e	---
Laughingwater-----	6e	---
Longmire-----	6e	---
Frogheaven-----	6w	---
Ghost, warm-----	6w	---
8120:		
Longmire-----	7e	---
Laughingwater-----	7e	---
Vantrump-----	6e	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
8120: Frogheaven-----	6w	---
Arahustan-----	7e	---
8125: Vantrump-----	7e	---
Laughingwater-----	7e	---
Longmire-----	7e	---
Arahustan-----	7e	---
Frogheaven-----	6w	---
Ohanapecosh-----	7e	---
8130: Summerland-----	7e	---
Longmire-----	7e	---
Vantrump-----	6e	---
Frogheaven-----	6w	---
8150: Ghost, warm-----	6w	---
Frogheaven-----	6w	---
Laughingwater-----	6c	---
Vantrump-----	6c	---
Water-----	8	---
8200: Riverwash-----	8	---
Flett, cold-----	6e	---
Water-----	8	---
8201: Mysticlake-----	6e	---
Unicornpeak-----	6e	---
Williwakas-----	6w	---
Ghost-----	6w	---
Owyhigh-----	6e	---
8203: Glacierisland-----	7e	---
Sheepskull-----	7e	---
Sluiskin-----	7e	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
8203: Wonderland-----	6e	---
8210: Mysticlake-----	6e	---
Unicornpeak-----	6e	---
Tipsoo-----	6e	---
Ghost-----	6w	---
8211: Owyhigh-----	7e	---
Mysticlake-----	6e	---
Williwakas-----	6w	---
Ipsut-----	7e	---
Mountwow-----	6w	---
8220: Tipsoo-----	7e	---
Unicornpeak-----	7e	---
Mysticlake-----	7e	---
Williwakas-----	6w	---
Owyhigh-----	7e	---
8225: Mysticlake-----	7e	---
Unicornpeak-----	7e	---
Tipsoo-----	7e	---
Owyhigh-----	7e	---
Ipsut-----	7e	---
Williwakas-----	6w	---
8230: Summerland, cold-----	7e	---
Tipsoo-----	7e	---
Wonderland-----	6e	---
Glacierisland-----	7e	---
8250: Ghost-----	6w	---
Williwakas-----	6w	---
Mountwow, moist-----	6w	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
8250: Unicornpeak-----	6c	---
Water-----	8	---
8251: Mountwow, moist-----	6e	---
Williwakas-----	6w	---
Unicornpeak-----	6e	---
Ghost-----	6w	---
8252: Mountwow, moist-----	7e	---
Unicornpeak-----	7e	---
Williwakas-----	6w	---
Owyhigh-----	7e	---
Rock outcrop-----	8	---
8255: Ghost-----	6w	---
Williwakas-----	6w	---
Mountwow-----	6w	---
Unicornpeak-----	6c	---
Water-----	8	---
8256: Mountwow-----	6w	---
Williwakas-----	6w	---
Unicornpeak-----	6c	---
Wahpenayo-----	6w	---
Ghost-----	6w	---
8257: Wahpenayo-----	7e	---
Mountwow-----	7e	---
Williwakas-----	6w	---
Owyhigh-----	7e	---
Unicornpeak-----	7e	---
9100: Arahustan-----	7e	---
Ohanapecosh-----	7e	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
9100:		
Longmire-----	7e	---
Rock outcrop-----	8	---
Vantrump-----	6c	---
9101:		
Ohanapecosh-----	7e	---
Arahustan-----	7e	---
Summerland-----	7e	---
Rock outcrop-----	8	---
Rubbleland, talus-----	8	---
9110:		
Longmire-----	7e	---
Arahustan-----	7e	---
Frogheaven-----	6w	---
Ohanapecosh-----	7e	---
Rock outcrop-----	8	---
Vantrump-----	6e	---
9120:		
Longmire-----	7e	---
Arahustan-----	7e	---
Vantrump-----	6e	---
Frogheaven-----	6w	---
Ohanapecosh-----	7e	---
9125:		
Longmire-----	7e	---
Arahustan-----	7e	---
Ohanapecosh-----	7e	---
Vantrump-----	6c	---
Frogheaven-----	6w	---
Laughingwater-----	6c	---
9200:		
Owyhigh-----	7e	---
Ipsut-----	7e	---
Tipsoo-----	7e	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
9200:		
Rock outcrop-----	8	---
Unicornpeak-----	6c	---
9201:		
Sluiskin-----	7e	---
Owyhigh-----	7e	---
Summerland, cold-----	7e	---
Rock outcrop-----	8	---
Rubbleland, talus-----	8	---
9210:		
Tipsoo-----	7e	---
Owyhigh-----	7e	---
Ipsut-----	7e	---
Mysticlake-----	6e	---
Rock outcrop-----	8	---
Williwakas-----	6w	---
9220:		
Tipsoo-----	7e	---
Owyhigh-----	7e	---
Mysticlake-----	7e	---
Ipsut-----	7e	---
Williwakas-----	6w	---
9225:		
Owyhigh-----	7e	---
Tipsoo-----	7e	---
Ipsut-----	7e	---
Mysticlake-----	6e	---
Unicornpeak-----	6e	---
Williwakas-----	6w	---
9250:		
Burroughs, moist-----	7e	---
Littletahoma, moist-----	7e	---
Tatoosh, moist-----	7e	---
Mountwow, moist-----	6e	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
9250: Rock outcrop-----	8	---
9251: Sarvant, moist-----	7e	---
Chenuis, moist-----	7e	---
Tatoosh, moist-----	7e	---
Rock outcrop-----	8	---
Rubbleland, talus-----	8	---
9252: Littletahoma, moist-----	7e	---
Burroughs, moist-----	7e	---
Mountwow, moist-----	7e	---
Tatoosh, moist-----	7e	---
Rock outcrop-----	8	---
Unicornpeak-----	7e	---
9253: Mountwow, moist-----	7e	---
Littletahoma, moist-----	7e	---
Unicornpeak-----	7e	---
Burroughs, moist-----	7e	---
Williwakas-----	6w	---
9254: Chenuis, moist-----	7e	---
Sarvant, moist-----	7e	---
Mountwow, moist-----	7e	---
Unicornpeak-----	7e	---
Tatoosh, moist-----	7e	---
Williwakas-----	6w	---
9255: Burroughs-----	7e	---
Littletahoma-----	7e	---
Tatoosh-----	7e	---
Mountwow-----	6e	---
Rock outcrop-----	8	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
9256:		
Chenuis-----	7e	---
Sarvant-----	7e	---
Tatoosh-----	7e	---
Rock outcrop-----	8	---
Rubbleland, talus-----	8	---
9257:		
Littletahoma-----	7e	---
Burroughs-----	7e	---
Mountwow-----	7e	---
Tatoosh-----	7e	---
Rock outcrop-----	8	---
9258:		
Mountwow-----	7e	---
Littletahoma-----	7e	---
Wahpenayo-----	7e	---
Burroughs-----	7e	---
Unicornpeak-----	7e	---
Williwakas-----	6w	---
9259:		
Chenuis-----	7e	---
Sarvant-----	7e	---
Mountwow-----	7e	---
Unicornpeak-----	7e	---
Tatoosh-----	7e	---
Williwakas-----	6w	---
9260:		
Mountwow, alpine-----	7e	---
Chenuis, alpine-----	7e	---
Meany-----	7s	---
Riverwash-----	8	---
Wahpenayo, alpine-----	7e	---

Soil Survey of Mount Rainier National Park, Washington

Table 6.--Land Capability Classification--Continued

Map symbol and soil name	Land capability subclass	
	Non-irrigated	Irrigated
9261:		
Wahpenayo, alpine-----	7e	---
Burroughs, alpine-----	7e	---
Mountwow, alpine-----	7e	---
Chenuis, alpine-----	7e	---
Meany-----	7s	---
9262:		
Sarvant, alpine-----	7e	---
Wahpenayo, alpine-----	7e	---
Mountwow, alpine-----	7e	---
Chenuis, alpine-----	7e	---
Rock outcrop-----	8	---
Tatoosh, alpine-----	7e	---
9263:		
Tamanos-----	7e	---
Glaciers-----	8	---
9993:		
Rubbleland, talus-----	8	---
Rock outcrop-----	8	---
Sluiskin-----	7e	---
Summerland, cold-----	7e	---
9994:		
Rubbleland, till-----	8	---
Glacierisland-----	7e	---
Wonderland-----	7e	---
Sheepskull-----	7e	---
9996:		
Glaciers-----	8	---
Rock outcrop-----	8	---
Tatoosh, volcanic cone-----	7e	---
W:		
Water-----	8	---

Table 7.--Hydric Soils

(This table includes only hydric components. Map units with no hydric components are not listed. Definitions of hydric criteria codes are included at the end of the table.)

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils criteria			
					Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
6101: Comet-Carbon complex, 0 to 20 percent slopes	Sunbeam	10	Yes	Depressions of flood plains, depressions of terraces	2, 3	Yes	No	Yes
6110: Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes	Sunbeam	20	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
6120: Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes	Sunbeam	15	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
6125: Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes	Sunbeam	10	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
7110: Kautz-Goldenlakes complex, 35 to 100 percent slopes	Sunbeam	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
7120: Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes	Sunbeam	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
7125: Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes	Sunbeam	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils criteria			
					Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
8101: Flett-Narada complex, 0 to 25 percent slopes	Frogheaven	10	Yes	Depressions of terraces, depressions of flood plains	2, 3	Yes	No	Yes
8110: Vantrump- Laughingwater- Longmire complex, 0 to 35 percent slopes	Frogheaven	10	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
	Ghost, warm	5	Yes	Debris aprons on mountain slopes	1, 2, 3	Yes	No	Yes
8120: Longmire- Laughingwater- Vantrump complex, 5 to 65 percent slopes	Frogheaven	10	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
8125: Vantrump- Laughingwater- Longmire complex, 10 to 65 percent slopes	Frogheaven	5	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
8130: Summerland-Longmire complex, 15 to 100 percent slopes	Frogheaven	5	Yes	Swales of glacial- valley walls	2, 3	Yes	No	Yes
8150: Ghost-Frogheaven complex, 0 to 10 percent slopes	Ghost, warm	45	Yes	Debris aprons on mountain slopes	1, 2, 3	Yes	No	Yes
	Frogheaven	30	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils criteria			
					Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
8201: Mysticlake- Unicornpeak- Williwakas complex, 0 to 40 percent slopes	Williwakas	15	Yes	Depressions of cirque floors	2, 3	Yes	No	Yes
	Ghost	5	Yes	Depressions of cirque floors	1, 2, 3	Yes	No	Yes
8210: Mysticlake- Unicornpeak-Tipsoo complex, 5 to 40 percent slopes	Ghost	10	Yes	Depressions of cirque floors	1, 2, 3	Yes	No	Yes
8211: Owyhigh-Mysticlake- Williwakas complex, 0 to 50 percent slopes	Williwakas	15	Yes	Depressions of cirque floors	2, 3	Yes	No	Yes
8220: Tipsoo-Unicornpeak- Mysticlake complex, 10 to 55 percent slopes	Williwakas	10	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
8225: Mysticlake- Unicornpeak-Tipsoo complex, 10 to 55 percent slopes	Williwakas	5	Yes	Debris aprons on mountain slopes	2, 3	Yes	No	Yes
8250: Ghost-Williwakas- Mountwow, moist complex, 0 to 20 percent slopes	Ghost	35	Yes	Depressions of cirque floors	1, 2, 3	Yes	No	Yes
	Williwakas	30	Yes	Depressions of cirque floors	2, 3	Yes	No	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils criteria			
					Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
8251: Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes	Williwakas	25	Yes	Depressions of cirque floors	2, 3	Yes	No	Yes
	Ghost	10	Yes	Depressions of cirque floors	1, 2, 3	Yes	No	Yes
8252: Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes	Williwakas	15	Yes	Depressions of cirques	2, 3	Yes	No	Yes
8255: Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes	Ghost	35	Yes	Depressions of cirque floors	1, 2, 3	Yes	No	Yes
	Williwakas	30	Yes	Depressions of cirque floors	2, 3	Yes	No	Yes
8256: Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes	Williwakas	20	Yes	Depressions of cirque floors	2, 3	Yes	No	Yes
	Ghost	5	Yes	Depressions of cirque floors	1, 2, 3	Yes	No	Yes
8257: Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes	Williwakas	15	Yes	Depressions of cirques	2, 3	Yes	No	Yes
9110: Longmire-Arahustan complex, 35 to 100 percent slopes	Frogheaven	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils criteria			
					Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
9120: Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes	Frogheaven	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9125: Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes	Frogheaven	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9210: Tipsoo-Owyhigh complex, 35 to 100 percent slopes	Williwakas	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9220: Tipsoo-Owyhigh-Mystic lake complex, 20 to 65 percent slopes	Williwakas	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9225: Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes	Williwakas	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9253: Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes	Williwakas	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9254: Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes	Williwakas	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9258: Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes	Williwakas	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes

Table 7.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Hydric	Landform	Hydric soils criteria			
					Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
9259: Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes	Williwakas	5	Yes	Swales of glacial-valley walls	2, 3	Yes	No	Yes
9260: Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes	Meany	15	Yes	Swales of cirques	2	Yes	No	No
9261: Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes	Meany	10	Yes	Swales of cirques	2	Yes	No	No

## Explanation of hydric criteria codes:

1. All Histels except Folistels and Histosols except Folists; or
2. Map unit components in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, or Andic, Cumulic, Pachic, or Vitrandic subgroups that:
  - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
  - b. Show evidence that the soil meets the definition of a hydric soil;
3. Map unit components that are frequently ponded for long duration or very long duration during the growing season that:
  - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
  - b. Show evidence that the soil meets the definition of a hydric soil; or
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
  - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
  - b. Show evidence that the soils meet the definition of a hydric soil.

Soil Survey of Mount Rainier National Park, Washington

**Table 8.--Common and Scientific Plant Names by Common Name**

(Plants shown in this table are in the National Soils Information System (NASIS) plant tables used for the survey area. The scientific and common names are referenced in the USDA PLANTS database (<http://plants.usda.gov>).

Local common name	Scientific name	Plant symbol
Alaska cedar	<i>Callitropsis nootkatensis</i>	CANO9
Alaska huckleberry	<i>Vaccinium alaskense</i>	VAAL
Alpine leafybract aster	<i>Sympyotrichum foliaceum</i> var. <i>foliaceum</i>	SYFOF
American bistort	<i>Polygonum bistortoides</i>	POBI6
American skunkcabbage	<i>Lysichiton americanus</i>	LYAM3
Arctic lupine	<i>Lupinus arcticus</i>	LUAR2
Asahinea lichen	<i>Asahinea</i>	ASAHI2
Barclay's willow	<i>Salix barclayi</i>	SABA3
Bearberry manzanita	<i>Arctostaphylos uva-ursi</i>	ARUV
Bigleaf maple	<i>Acer macrophyllum</i>	ACMA3
Black alpine sedge	<i>Carex nigricans</i>	CANI2
Black cottonwood	<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	POBAT
Black mountain huckleberry	<i>Vaccinium membranaceum</i>	VAME
Bluejoint reedgrass	<i>Calamagrostis canadensis</i>	CACA4
Bog Labrador tea	<i>Ledum groenlandicum</i>	LEGRE
Bunchberry dogwood	<i>Cornus canadensis</i>	COCA13
Cascade azalea	<i>Rhododendron albiflorum</i>	RHAL2
Cascade huckleberry	<i>Vaccinium deliciosum</i>	VADE
Cascade Oregongrape	<i>Mahonia nervosa</i>	MANE2
Claspleaf twistedstalk	<i>Streptopus amplexifolius</i> var. <i>amplexifolius</i>	STAMA2
Columbia brome	<i>Bromus vulgaris</i>	BRVU
Common beargrass	<i>Xerophyllum tenax</i>	XETE
Common yarrow	<i>Achillea millefolium</i>	ACMI2
Davis' knotweed	<i>Polygonum davisiae</i>	PODA
Deer fern	<i>Blechnum spicant</i>	BLSP
Deerfoot vanillaleaf	<i>Achlys triphylla</i>	ACTR
Devilsclub	<i>Oplopanax horridus</i>	OPHO
Douglas-fir	<i>Pseudotsuga menziesii</i>	PSME
Dwarf bramble	<i>Rubus lasiococcus</i>	RULA2
Engelmann spruce	<i>Picea engelmannii</i>	PIEN
False hellebore	<i>Veratrum viride</i>	VEVI
Fireweed	<i>Chamerion angustifolium</i> ssp. <i>angustifolium</i>	CHANA2
Five-leaved bramble	<i>Rubus pedatus</i>	RUPE
Grand fir	<i>Abies grandis</i>	ABGR
Ladyfern	<i>Athyrium filix-femina</i>	ATFI
Mountain hemlock	<i>Tsuga mertensiana</i>	TSME
Mountain juniper	<i>Juniperus communis</i> var. <i>montana</i>	JUCOM2
Myrtle pachistima	<i>Paxistima myrsinifolia</i>	PAMY
Noble fir	<i>Abies procera</i>	ABPR
Oakfern	<i>Gymnocarpium dryopteris</i>	GYDR
Oregon oxalis	<i>Oxalis oregana</i>	OXOR
Tundra aster	<i>Oreastera alpigenum</i> var. <i>alpigenum</i>	ORALA2
Pacific silver fir	<i>Abies amabilis</i>	ABAM
Pacific yew	<i>Taxus brevifolia</i>	TABR2
Partridgefoot	<i>Luetkea pectinata</i>	LUPE
Pearly everlasting	<i>Anaphalis margaritacea</i>	ANMA
Pink mountain heather	<i>Phyllocladus empetrifolius</i>	PHEM
Prince's pine	<i>Chimaphila umbellata</i>	CHUM
Rattlesnake plantain	<i>Goodyera oblongifolia</i>	GOOB2
Red alder	<i>Alnus rubra</i>	ALRU2
Red elderberry	<i>Sambucus racemosa</i>	SARA2
Red huckleberry	<i>Vaccinium parvifolium</i>	VAPA
Rush	<i>Juncus</i>	JUNCU
Rusty menziesia	<i>Menziesia ferruginea</i>	MEFE
Salal	<i>Gaultheria shallon</i>	GASH
Salmonberry	<i>Rubus spectabilis</i>	RUSP
Scouler's willow	<i>Salix scouleriana</i>	SASC

Soil Survey of Mount Rainier National Park, Washington

Table 8.--Common and Scientific Plant Names by Common Name--Continued

Local common name	Scientific name	Plant symbol
Sidebells wintergreen	<i>Orthilia secunda</i>	ORSE
Sitka alder	<i>Alnus viridis ssp. sinuata</i>	ALVIS
Sitka mountain-ash	<i>Sorbus sitchensis var. sitchensis</i>	SOSIS2
Sitka valerian	<i>Valeriana sitchensis</i>	VASI
Smooth woodrush	<i>Luzula glabrata</i>	LUGL2
Spreading phlox	<i>Phlox diffusa</i>	PHDI3
Subalpine fir	<i>Abies lasiocarpa</i>	ABLA
Thimbleberry	<i>Rubus parviflorus</i>	RUPA
Tiling's monkeyflower	<i>Mimulus tilingii</i>	MITI
Twinflower	<i>Linnaea borealis</i>	LIBO3
Vine maple	<i>Acer circinatum</i>	ACCI
Water parsley	<i>Oenanthe sarmentosa</i>	OESA
Water sedge	<i>Carex aquatilis</i>	CAAQ
Western columbine	<i>Aquilegia formosa</i>	AQFO
Western hemlock	<i>Tsuga heterophylla</i>	TSHE
Western redcedar	<i>Thuja plicata</i>	THPL
Western swordfern	<i>Polystichum munitum</i>	POMU
Western white pine	<i>Pinus monticola</i>	PIMO3
White marsh marigold	<i>Caltha leptosepala</i>	CALE4
White mountain heather	<i>Cassiope mertensiana</i>	CAME7

Soil Survey of Mount Rainier National Park, Washington

**Table 9.--Common and Scientific Plant Names by Plant Symbol**

(Plants shown in this table are in the National Soils Information System (NASIS) plant tables used for the survey area. The scientific and common names are referenced in the USDA PLANTS database (<http://plants.usda.gov>).

Local common name	Scientific name	Plant symbol
Pacific silver fir	<i>Abies amabilis</i>	ABAM
Grand fir	<i>Abies grandis</i>	ABGR
Subalpine fir	<i>Abies lasiocarpa</i>	ABLA
Noble fir	<i>Abies procera</i>	ABPR
Vine maple	<i>Acer circinatum</i>	ACCI
Bigleaf maple	<i>Acer macrophyllum</i>	ACMA3
Common yarrow	<i>Achillea millefolium</i>	ACMI2
Deerfoot vanillaleaf	<i>Achlyis triphylla</i>	ACTR
Red alder	<i>Alnus rubra</i>	ALRU2
Sitka alder	<i>Alnus viridis ssp. sinuata</i>	ALVIS
Pearly everlasting	<i>Anaphalis margaritacea</i>	ANMA
Western columbine	<i>Aquilegia formosa</i>	AQFO
Bearberry manzanita	<i>Arctostaphylos uva-ursi</i>	ARUV
Asahinea lichen	<i>Asahinea</i>	ASAHI2
Ladyfern	<i>Athyrium filix-femina</i>	ATFI
Deer fern	<i>Blechnum spicant</i>	BLSP
Columbia brome	<i>Bromus vulgaris</i>	BRVU
Water sedge	<i>Carex aquatilis</i>	CAAQ
Bluejoint reedgrass	<i>Calamagrostis canadensis</i>	CACA4
White marsh marigold	<i>Caltha leptosepala</i>	CALE4
White mountain heather	<i>Cassiope mertensiana</i>	CAME7
Black alpine sedge	<i>Carex nigricans</i>	CANI2
Alaska cedar	<i>Callitropsis nootkatensis</i>	CANO9
Fireweed	<i>Chamerion angustifolium ssp. angustifolium</i>	CHANA2
Prince's pine	<i>Chimaphila umbellata</i>	CHUM
Bunchberry dogwood	<i>Cornus canadensis</i>	COCA13
Salal	<i>Gaultheria shallon</i>	GASH
Rattlesnake plantain	<i>Goodyera oblongifolia</i>	GOOB2
Oakfern	<i>Gymnocarpium dryopteris</i>	GYDR
Mountain juniper	<i>Juniperus communis var. montana</i>	JUCOM2
Rush	<i>Juncus</i>	JUNCU
Bog Labrador tea	<i>Ledum groenlandicum</i>	LEGR
Twinflower	<i>Linnaea borealis</i>	LIBO3
Arctic lupine	<i>Lupinus arcticus</i>	LUAR2
Smooth woodrush	<i>Luzula glabrata</i>	LUGL2
Partridgefoot	<i>Luetkea pectinata</i>	LUPE
American skunkcabbage	<i>Lysichiton americanus</i>	LYAM3
Cascade Oregongrape	<i>Mahonia nervosa</i>	MANE2
Rusty menziesia	<i>Menziesia ferruginea</i>	MEFE
Tiling's monkeyflower	<i>Mimulus tilingii</i>	MITI
Water parsley	<i>Oenanthe sarmentosa</i>	OESA
Devilsclub	<i>Oplopanax horridus</i>	OPHO
Tundra aster	<i>Oreostemma alpigenum var. alpigenum</i>	ORALA2
Sidebells wintergreen	<i>Orthilia secunda</i>	ORSE
Oregon oxalis	<i>Oxalis oregana</i>	OXOR
Myrtle pachistima	<i>Paxistima myrsinoides</i>	PAMY
Spreading phlox	<i>Phlox diffusa</i>	PHDI3
Pink mountain heather	<i>Phyllodoce empetriformis</i>	PHEM
Engelmann spruce	<i>Picea engelmannii</i>	PIEN
Western white pine	<i>Pinus monticola</i>	PIMO3
Black cottonwood	<i>Populus balsamifera ssp. trichocarpa</i>	POBAT
American bistort	<i>Polygonum bistortoides</i>	POBI6
Davis' knotweed	<i>Polygonum davisiae</i>	PODA
Western swordfern	<i>Polystichum munitum</i>	POMU
Douglas-fir	<i>Pseudotsuga menziesii</i>	PSME
Cascade azalea	<i>Rhododendron albiflorum</i>	RHAL2
Dwarf Bramble	<i>Rubus lasiococcus</i>	RULA2

Soil Survey of Mount Rainier National Park, Washington

Table 9.--Common and Scientific Plant Names by Plant Symbol--Continued

Local common name	Scientific name	Plant symbol
Thimbleberry	<i>Rubus parviflorus</i>	RUPA
Five-leaved bramble	<i>Rubus pedatus</i>	RUPE
Salmonberry	<i>Rubus spectabilis</i>	RUSP
Barclay's willow	<i>Salix barclayi</i>	SABA3
Red elderberry	<i>Sambucus racemosa</i>	SARA2
Scouler's willow	<i>Salix scouleriana</i>	SASC
Sitka mountain-ash	<i>Sorbus sitchensis</i> var. <i>sitchensis</i>	SOSIS2
Claspleaf twistedstalk	<i>Streptopus amplexifolius</i> var. <i>amplexifolius</i>	STAMA2
Alpine leafybract aster	<i>Symphytum foliaceum</i> var. <i>foliaceum</i>	SYFOF
Pacific yew	<i>Taxus brevifolia</i>	TABR2
Western redcedar	<i>Thuja plicata</i>	THPL
Western hemlock	<i>Tsuga heterophylla</i>	TSHE
Mountain hemlock	<i>Tsuga mertensiana</i>	TSME
Alaska huckleberry	<i>Vaccinium alaskense</i>	VAAL
Cascade huckleberry	<i>Vaccinium deliciosum</i>	VADE
Black mountain huckleberry	<i>Vaccinium membranaceum</i>	VAME
Red huckleberry	<i>Vaccinium parvifolium</i>	VAPA
Sitka valerian	<i>Valeriana sitchensis</i>	VASI
False hellebore	<i>Veratrum viride</i>	VEVI
Common beargrass	<i>Xerophyllum tenax</i>	XETE

Soil Survey of Mount Rainier National Park, Washington

**Table 10.--Rangeland Ecological Site and Vegetation**

Map symbol and soil name	Ecological site	Characteristic vegetation
8110: Ghost, warm-----	R003XN640WA - Southern Washington Cascades Low Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CACA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8150: Ghost, warm-----	R003XN640WA - Southern Washington Cascades Low Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CACA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8201: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
Ghost-----	R003XN641WA - Southern Washington Cascades High Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CACA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8210: Ghost-----	R003XN641WA - Southern Washington Cascades High Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CACA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8211: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
8211: Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VAST) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
8220: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8225: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8250: Ghost-----	R003XN641WA - Southern Washington Cascades High Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
8250: Mountwow, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
8251: Mountwow, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CAC4A) Bog Labrador tea (LEGRA) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
Ghost-----	R003XN641WA - Southern Washington Cascades High Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CAC4A) Bog Labrador tea (LEGRA) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
8252: Mountwow, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8255: Ghost-----	R003XN641WA - Southern Washington Cascades High Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
8256: Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
Wahpenayo-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) American bistort (POBI6) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Ghost-----	R003XN641WA - Southern Washington Cascades High Cryic Bog or Fen	American skunkcabbage (LYAM3) Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
8257: Wahpenayo-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) American bistort (POBI6) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
8257: Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
9210: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
9220: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
9225: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
9250: Burroughs, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9250: Littletahoma, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Tatoosh, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Mountwow, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
9251: Sarvant, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9251: Chenuis, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Tatoosh, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
9252: Littletahoma, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Burroughs, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Mountwow, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9252: Tatoosh, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
9253: Mountwow, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Littletahoma, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Burroughs, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9254: Chenuis, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Sarvant, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Mountwow, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Tatoosh, moist-----	R003XN541WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9254: Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
9255: Burroughs-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Littletahoma-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Tatoosh-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9256: Chenuis-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Sarvant-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Tatoosh-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
9257: Littleahoma-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Burroughs-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster p(ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9257: Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Tatoosh-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
9258: Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Littletahoma-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Wahpenayo-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) American bistort (POBI6) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9258: Burroughs-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Columbia brome (BRVU) Common yarrow (ACMI2) Tundra aster (ORALA2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CACAA4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
9259: Chenuis-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Sarvant-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Cascade huckleberry (VADE) Columbia brome (BRVU) Common beargrass (XETE) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Tundra aster (ORALA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9259: Mountwow-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Alaska huckleberry (VAAL) American bistort (POBI6) Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Cascade huckleberry (VADE) Common yarrow (ACMI2) False hellebore (VEVI) Tundra aster (ORALA2) Pink mountain heather (PHEM) Sitka valerian (VASI) Smooth woodrush (LUGL2) Western columbine (AQFO) White mountain heather (CAME7)
Tatoosh-----	R003XN542WA - Southern Washington Cascades Subalpine Parkland	Arctic lupine (LUAR2) Bearberry manzanita (ARUV) Columbia brome (BRVU) Common yarrow (ACMI2) Mountain juniper (JUCOM2) Myrtle pachistima (PAMY) Sitka valerian (VASI) Smooth woodrush (LUGL2) Spreading phlox (PHDI3)
Williwakas-----	R003XN540WA - Southern Washington Cascades Wet Subalpine Parkland	Black alpine sedge (CANI2) Bluejoint reedgrass (CAC4) Bog Labrador tea (LEGR) Rush (JUNCU) Water parsley (OESA) Water sedge (CAAQ) White marsh marigold (CALE4)
9260: Mountwow, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Common yarrow (ACMI2) Davis' knotweed (PODA) Tundra aster (ORALA2) Tiling's monkeyflower (MITI)
Chenuis, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Common yarrow (ACMI2) Davis' knotweed (PODA) Mountain juniper (JUCOM2) Tundra aster (ORALA2) Spreading phlox (PHDI3)
Meany-----	R003XN544WA - Southern Washington Cascades Wet Alpine Tundra	Arctic lupine (LUAR2) Black alpine sedge (CANI2) Partridgefoot (LUPE) Tiling's monkeyflower (MITI)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9260: Wahpenayo, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Common yarrow (ACMI2) Davis' knotweed (PODA) Tundra aster (ORALA2) Tiling's monkeyflower (MITI)
9261: Wahpenayo, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Common yarrow (ACMI2) Davis' knotweed (PODA) Tundra aster (ORALA2) Tiling's monkeyflower (MITI)
Burroughs, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Common yarrow (ACMI2) Davis' knotweed (PODA) Mountain juniper (JUCOM2) Tundra aster (ORALA2) Spreading phlox (PHDI3)
Mountwow, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Common yarrow (ACMI2) Davis' knotweed (PODA) Tundra aster (ORALA2) Tiling's monkeyflower (MITI)
Chenuis, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Common yarrow (ACMI2) Davis' knotweed (PODA) Mountain juniper (JUCOM2) Tundra aster (ORALA2) Spreading phlox (PHDI3)
Meany-----	R003XN544WA - Southern Washington Cascades Wet Alpine Tundra	Arctic lupine (LUAR2) Black alpine sedge (CANI2) Partridgefoot (LUPE) Tiling's monkeyflower (MITI)
9262: Sarvant, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Common yarrow (ACMI2) Davis' knotweed (PODA) Mountain juniper (JUCOM2) Tundra aster (ORALA2) Spreading phlox (PHDI3)

Soil Survey of Mount Rainier National Park, Washington

Table 10.--Rangeland Ecological Site and Vegetation--Continued

Map symbol and soil name	Ecological site	Characteristic vegetation
9262: Wahpenayo, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Common yarrow (ACMI2) Davis' knotweed (PODA) Tundra aster (ORALA2) Tiling's monkeyflower (MITI)
Mountwow, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Common yarrow (ACMI2) Davis' knotweed (PODA) Tundra aster (ORALA2) Tiling's monkeyflower (MITI)
Chenuis, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Common yarrow (ACMI2) Davis' knotweed (PODA) Mountain juniper (JUCOM2) Tundra aster (ORALA2) Spreading phlox (PHDI3)
Tatoosh, alpine-----	R003XN543WA - Southern Washington Cascades Alpine Tundra	Alpine leafybract aster (SYFOF) Arctic lupine (LUAR2) Common yarrow (ACMI2) Davis' knotweed (PODA) Mountain juniper (JUCOM2) Tundra aster (ORALA2) Spreading phlox (PHDI3)
9263: Tamanos-----	R003XN545WA - Southern Washington Cascades Debris Covered Glaciers	Fireweed (CHANA2) Pearly everlasting (ANMA) Scouler's willow (SASC) Sitka alder (ALVIS)
9996: Tatoosh, volcanic cone--	R003XN543WA - Southern Washington Cascades Alpine Tundra	Arctic lupine (LUAR2) Asahinea lichen (ASAHI2) Davis' knotweed (PODA) Tundra aster (ORALA2) Spreading phlox (PHDI3)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
6100: Comet-----	Bigleaf maple Black cottonwood Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN940WA - <i>Populus balsamifera</i> <i>ssp. trichocarpa</i> - <i>Tsuga heterophylla/Mahonia nervosa/Goodyera oblongifolia</i>	/Cascade Oregongrape (MANE2) Deerfoot vanillaleaf (ACTR) Oregon oxalis (OXOR) Rattlesnake plantain (GOOB2) Vine maple (ACCI) Western swordfern (POMU)
6101: Comet-----	Bigleaf maple Black cottonwood Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN940WA - <i>Populus balsamifera</i> <i>ssp. trichocarpa</i> - <i>Tsuga heterophylla/Mahonia nervosa/Goodyera oblongifolia</i>	/Cascade Oregongrape (MANE2) Deerfoot vanillaleaf (ACTR) Oregon oxalis (OXOR) Rattlesnake plantain (GOOB2) Vine maple (ACCI) Western swordfern (POMU)
Carbon-----	Bigleaf maple Black cottonwood Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN940WA - <i>Populus balsamifera</i> <i>ssp. trichocarpa</i> - <i>Tsuga heterophylla/Mahonia nervosa/Goodyera oblongifolia</i>	/Cascade Oregongrape (MANE2) Deerfoot vanillaleaf (ACTR) Oregon oxalis (OXOR) Rattlesnake plantain (GOOB2) Vine maple (ACCI) Western swordfern (POMU)
Sunbeam-----	Red alder Western hemlock Western redcedar	F003XN941WA - <i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i>	/American skunkcabbage (LYAM3) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
6110: Tokaloo-----	Bigleaf maple Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN942WA - <i>Tsuga heterophylla</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> - <i>Rubus spectabilis</i>	Cascade Oregongrape (MANE2) Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Kautz-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i> - <i>Mahonia nervosa</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Sunbeam-----	Red alder Western hemlock Western redcedar	F003XN941WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Lysichiton americanus</i> - <i>Oxalis oregana</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
6120: Kautz-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i> - <i>Mahonia nervosa</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
6120: Tokaloo-----	Bigleaf maple Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN942WA - <i>Tsuga heterophylla</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> - <i>Rubus spectabilis</i>	/Cascade Oregongrape (MANE2) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) /Oregon oxalis (OXOR) /Salmonberry (RUSP) /Thimbleberry (RUPA) /Twinflower (LIBO3) /Vine maple (ACCI) /Western swordfern (POMU)
Sunbeam-----	Red alder Western hemlock Western redcedar	F003XN941WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Lysichiton americanus</i> - <i>Oxalis oregana</i>	/American skunkcabbage (LYAM3) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) /Oregon oxalis (OXOR) /Salmonberry (RUSP) /Thimbleberry (RUPA) /Twinflower (LIBO3) /Vine maple (ACCI) /Western swordfern (POMU)
Goldenlakes-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i> - <i>Mahonia nervosa</i>	/Black mountain huckleberry (VAME) /Cascade Oregongrape (MANE2) /Common beargrass (XETE) /Deerfoot vanillaleaf (ACTR) /Myrtle pachistima (PAMY) /Prince's pine (CHUM) /Red huckleberry (VAPA) /Salal (GASH) /Vine maple (ACCI) /Western swordfern (POMU)
6125: Tokaloo-----	Bigleaf maple Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN942WA - <i>Tsuga heterophylla</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> - <i>Rubus spectabilis</i>	/Cascade Oregongrape (MANE2) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) /Oregon oxalis (OXOR) /Salmonberry (RUSP) /Thimbleberry (RUPA) /Twinflower (LIBO3) /Vine maple (ACCI) /Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
6125: Kautz-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME)  Cascade Oregongrape (MANE2)  Common beargrass (XETE)  Deerfoot vanillaleaf (ACTR)  Myrtle pachistima (PAMY)  Prince's pine (CHUM)  Red huckleberry (VAPA)  Salal (GASH)  Vine maple (ACCI)  Western swordfern (POMU)
Goldenlakes-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME)  Cascade Oregongrape (MANE2)  Common beargrass (XETE)  Deerfoot vanillaleaf (ACTR)  Myrtle pachistima (PAMY)  Prince's pine (CHUM)  Red huckleberry (VAPA)  Salal (GASH)  Vine maple (ACCI)  Western swordfern (POMU)
Sunbeam-----	Red alder Western hemlock Western redcedar	F003XN941WA - <i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i>	/American skunkcabbage (LYAM3)  Deer fern (BLSP)  Devilsclub (OPHO)  Oakfern (GYDR)  Oregon oxalis (OXOR)  Salmonberry (RUSP)  Thimbleberry (RUPA)  Twinflower (LIBO3)  Vine maple (ACCI)  Western swordfern (POMU)
Ingraham-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME)  Cascade Oregongrape (MANE2)  Common beargrass (XETE)  Deerfoot vanillaleaf (ACTR)  Myrtle pachistima (PAMY)  Prince's pine (CHUM)  Red huckleberry (VAPA)  Salal (GASH)  Vine maple (ACCI)  Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
7100: Goldenlakes-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Ingraham-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Kautz-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
7110: Kautz-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
7110: Goldenlakes-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) /Cascade Oregongrape (MANE2) /Common beargrass (XETE) /Deerfoot vanillaleaf (ACTR) /Myrtle pachistima (PAMY) /Prince's pine (CHUM) /Red huckleberry (VAPA) /Salal (GASH) /Vine maple (ACCI) /Western swordfern (POMU)
Tokaloo-----	Bigleaf maple Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN942WA - <i>Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis</i>	/Cascade Oregongrape (MANE2) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) /Oregon oxalis (OXOR) /Salmonberry (RUSP) /Thimbleberry (RUPA) /Twinflower (LIBO3) /Vine maple (ACCI) /Western swordfern (POMU)
Ingraham-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) /Cascade Oregongrape (MANE2) /Common beargrass (XETE) /Deerfoot vanillaleaf (ACTR) /Myrtle pachistima (PAMY) /Prince's pine (CHUM) /Red huckleberry (VAPA) /Salal (GASH) /Vine maple (ACCI) /Western swordfern (POMU)
Sunbeam-----	Red alder Western hemlock Western redcedar	F003XN941WA - <i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i>	/American skunkcabbage (LYAM3) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) /Oregon oxalis (OXOR) /Salmonberry (RUSP) /Thimbleberry (RUPA) /Twinflower (LIBO3) /Vine maple (ACCI) /Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
7120: Kautz-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) /Cascade Oregongrape (MANE2) /Common beargrass (XETE) /Deerfoot vanillaleaf (ACTR) /Myrtle pachistima (PAMY) /Prince's pine (CHUM) /Red huckleberry (VAPA) /Salal (GASH) /Vine maple (ACCI) /Western swordfern (POMU)
Tokaloo-----	Bigleaf maple Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN942WA - <i>Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis</i>	/Cascade Oregongrape (MANE2) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) /Oregon oxalis (OXOR) /Salmonberry (RUSP) /Thimbleberry (RUPA) /Twinflower (LIBO3) /Vine maple (ACCI) /Western swordfern (POMU)
Goldenlakes-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) /Cascade Oregongrape (MANE2) /Common beargrass (XETE) /Deerfoot vanillaleaf (ACTR) /Myrtle pachistima (PAMY) /Prince's pine (CHUM) /Red huckleberry (VAPA) /Salal (GASH) /Vine maple (ACCI) /Western swordfern (POMU)
Ingraham-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i>	/Black mountain huckleberry (VAME) /Cascade Oregongrape (MANE2) /Common beargrass (XETE) /Deerfoot vanillaleaf (ACTR) /Myrtle pachistima (PAMY) /Prince's pine (CHUM) /Red huckleberry (VAPA) /Salal (GASH) /Vine maple (ACCI) /Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
7120: Sunbeam-----	Red alder Western hemlock Western redcedar	F003XN941WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Lysichiton americanus</i> - <i>Oxalis oregana</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
7125: Goldenlakes-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i> - <i>Mahonia nervosa</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Kautz-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i> - <i>Mahonia nervosa</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Ingraham-----	Douglas-fir Western hemlock Western redcedar	F003XN943WA - <i>Tsuga heterophylla</i> - <i>Pseudotsuga menziesii</i> / <i>Gaultheria shallon</i> - <i>Mahonia nervosa</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
7125: Tokaloo-----	Bigleaf maple Douglas-fir Grand fir Red alder Western hemlock Western redcedar	F003XN942WA - <i>Tsuga heterophylla</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> - <i>Rubus spectabilis</i>	/Cascade Oregon grape (MANE2) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Sunbeam-----	Red alder Western hemlock Western redcedar	F003XN941WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Lysichiton americanus</i> - <i>Oxalis oregana</i>	/American skunkcabbage (LYAM3) /Deer fern (BLSP) /Devilsclub (OPHO) /Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
8100: Flett-----	Black cottonwood Douglas-fir Engelmann spruce Noble fir Pacific silver fir Sitka alder Western hemlock Western redcedar	F003XN944WA - <i>Populus balsamifera</i> ssp. <i>trichocarpa</i> - <i>Abies amabilis</i> / <i>Acer circinatum</i> / <i>Polystichum munitum</i>	/Barclay's willow (SABA3) Fireweed (CHANAA2) Prince's pine (CHUM) Red huckleberry (VAPA) Vine maple (ACCI) Western swordfern (POMU)
Narada-----	Black cottonwood Douglas-fir Engelmann spruce Noble fir Pacific silver fir Sitka alder Western hemlock Western redcedar	F003XN944WA - <i>Populus balsamifera</i> ssp. <i>trichocarpa</i> - <i>Abies amabilis</i> / <i>Acer circinatum</i> / <i>Polystichum munitum</i>	/Barclay's willow (SABA3) Fireweed (CHANAA2) Prince's pine (CHUM) Red huckleberry (VAPA) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8101: Flett-----	Black cottonwood Douglas-fir Engelmann spruce Noble fir Pacific silver fir Sitka alder Western hemlock Western redcedar	F003XN944WA - <i>Populus balsamifera</i> <i>ssp. trichocarpa</i> - <i>Abies amabilis/Acer circinatum</i> / <i>Polystichum munitum</i>	Barclay's willow (SABA3) Fireweed (CHANAA2) Prince's pine (CHUM) Red huckleberry (VAPA) Vine maple (ACCI) Western swordfern (POMU)
Narada-----	Black cottonwood Douglas-fir Engelmann spruce Noble fir Pacific silver fir Sitka alder Western hemlock Western redcedar	F003XN944WA - <i>Populus balsamifera</i> <i>ssp. trichocarpa</i> - <i>Abies amabilis/Acer circinatum</i> / <i>Polystichum munitum</i>	Barclay's willow (SABA3) Fireweed (CHANAA2) Prince's pine (CHUM) Red huckleberry (VAPA) Vine maple (ACCI) Western swordfern (POMU)
Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
8110: Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis-Thuja plicata/Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8110: Laughingwater-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
8120: Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8120: Laughingwater-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Arahustan-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8125: Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Laughingwater-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Arahustan-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8125: Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Ohanapecosh-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
8130: Summerland-----	Noble fir Pacific silver fir Sitka alder Vine maple Western hemlock Western redcedar	F003XN948WA - <i>Alnus viridis</i> ssp. <i>sinuata</i> - <i>Acer circinatum</i> / <i>Sambucus racemosa</i> - <i>Rubus parviflorus</i>	Claspleaf twistedstalk (STAM2) Common beargrass (XETE) Devilsclub (OPHO) Fireweed (CHAN2) Ladyfern (ATFI) Red elderberry (SARA2) Salmonberry (RUSP) Thimbleberry (RUPA)
Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8130: Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
8150: Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Laughingwater-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8150: Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
8200: Flett, cold-----	Alaska cedar Black cottonwood Engelmann spruce Sitka alder Subalpine fir	F003XN949WA - <i>Callitropsis nootkatensis</i> - <i>Alnus viridis</i> var. <i>sinuata</i> / <i>Salix barclayi</i> - <i>Rubus pedatus</i>	Barclay's willow (SABA3) Fireweed (CHANAA2) Five-leaved bramble (RUPE) Pearly everlasting (ANMA) Vine maple (ACCI)
8201: Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8201: Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
8203: Glacierisland-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Sheepskull-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Sluiskin-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8203: Wonderland-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
8210: Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8211: Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Ipsut-----	Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Sitka mountain-ash (SOSIS2) Smooth woodrush (LUGL2)
8220: Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8220: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
8225: Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8225: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Ipsut-----	Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Sitka mountain-ash (SOSIS2) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8230: Summerland, cold-----	Alaska cedar Mountain hemlock Sitka alder Subalpine fir	F003XN952WA - <i>Alnus viridis</i> ssp. <i>sinuata</i> - <i>Acer circinatum</i> / <i>Sorbus</i> <i>sitchensis</i> / <i>Veratrum viride</i>	Common beargrass (XETE) Devilsclub (OPHO) False hellebore (VEVI) Fireweed (CHAN2) Red elderberry (SARA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI)
Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga</i> <i>mertensiana</i> - <i>Abies</i> <i>lasiocarpa</i> / <i>Menziesia</i> <i>ferruginea</i> / <i>Xerophyllum tenax</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Wonderland-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga</i> <i>mertensiana</i> - <i>Callitropsis</i> <i>nootkatensis</i> / <i>Rhododendron</i> <i>albiflorum</i> - <i>Rubus lasiococcus</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Glacierisland-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga</i> <i>mertensiana</i> - <i>Abies</i> <i>lasiocarpa</i> / <i>Menziesia</i> <i>ferruginea</i> / <i>Xerophyllum tenax</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8250: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
8251: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
8252: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
8255: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
8256: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
8257: Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9100: Arahustan-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Ohanapecosh-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9101: Ohanapecohsh-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Arahustan-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Summerland-----	Noble fir Pacific silver fir Sitka alder Vine maple Western hemlock Western redcedar	F003XN948WA - <i>Alnus viridis</i> ssp. <i>sinuata</i> - <i>Acer circinatum</i> / <i>Sambucus racemosa</i> - <i>Rubus parviflorus</i>	Claspleaf twistedstalk (STAMA2) Common beargrass (XETE) Devilsclub (OPHO) Fireweed (CHANAA2) Ladyfern (ATFI) Red elderberry (SARA2) Salmonberry (RUSP) Thimbleberry (RUPA)
9110: Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9110: Arahustan-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Ohanapecosh-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9120: Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Arahustan-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9120: Ohanapecosh-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
9125: Longmire-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Western hemlock Western redcedar Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Vine maple (ACCI) Western swordfern (POMU)
Arahustan-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregon grape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9125: Ohanapecohsh-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)
Vantrump-----	Douglas-fir Engelmann spruce Noble fir Pacific silver fir Red alder Western hemlock Western redcedar	F003XN946WA - <i>Abies amabilis</i> - <i>Thuja plicata</i> / <i>Oplopanax horridus</i> / <i>Polystichum munitum</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Frogheaven-----	Red alder Western hemlock Western redcedar	F003XN945WA - <i>Thuja plicata</i> - <i>Alnus rubra</i> / <i>Oplopanax horridus</i> / <i>Lysichiton americanus</i>	American skunkcabbage (LYAM3) Deer fern (BLSP) Devilsclub (OPHO) Five-leaved bramble (RUPE) Oakfern (GYDR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Laughingwater-----	Douglas-fir Noble fir Pacific silver fir Western hemlock Western white pine	F003XN947WA - <i>Abies amabilis</i> - <i>Tsuga heterophylla</i> / <i>Vaccinium membranaceum</i> / <i>Linnaea borealis</i>	Black mountain huckleberry (VAME) Bunchberry dogwood (COCA13) Cascade Oregongrape (MANE2) Common beargrass (XETE) Deerfoot vanillaleaf (ACTR) Myrtle pachistima (PAMY) Pacific yew (TABR2) Prince's pine (CHUM) Red huckleberry (VAPA) Salal (GASH) Twinflower (LIBO3) Vine maple (ACCI)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9200: Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Ipsut-----	Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Sitka mountain-ash (SOSIS2) Smooth woodrush (LUGL2)
Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9201: Sluiskin-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Summerland, cold-----	Alaska cedar Mountain hemlock Sitka alder Subalpine fir	F003XN952WA - <i>Alnus viridis</i> ssp. <i>sinuata</i> - <i>Acer circinatum</i> / <i>Sorbus sitchensis</i> / <i>Veratrum viride</i>	Common beargrass (XETE) Devilsclub (OPHO) False hellebore (VEVI) Fireweed (CHAN2) Red elderberry (SARA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI)
9210: Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9210: Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Ipsut-----	Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Sitka mountain-ash (SOSIS2) Smooth woodrush (LUGL2)
Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
9220: Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9220: Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Ipsut-----	Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Sitka mountain-ash (SOSIS2) Smooth woodrush (LUGL2)
9225: Owyhigh-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9225: Tipsoo-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Ipsut-----	Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Sitka mountain-ash (SOSIS2) Smooth woodrush (LUGL2)
Mysticlake-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9252: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
9253: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
9254: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
9258: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9259: Unicornpeak-----	Alaska cedar Engelmann spruce Mountain hemlock Pacific silver fir Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
9993: Sluiskin-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)
Summerland, cold-----	Alaska cedar Mountain hemlock Sitka alder Subalpine fir	F003XN952WA - <i>Alnus viridis</i> ssp. <i>sinuata</i> - <i>Acer circinatum</i> / <i>Sorbus sitchensis</i> / <i>Veratrum viride</i>	Common beargrass (XETE) Devilsclub (OPHO) False hellebore (VEVI) Fireweed (CHANAA2) Red elderberry (SARA2) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI)
9994: Glacierisland-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	/Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 11.--Forestland Common Trees, Ecological Site, and Common Understory Vegetation--Continued

Map symbol and soil name	Common trees	Ecological site	Common understory vegetation
9994: Wonderland-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Subalpine fir	F003XN950WA - <i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i>	Black mountain huckleberry (VAME) Cascade azalea (RHAL2) Common beargrass (XETE) Dwarf bramble (RULA2) Five-leaved bramble (RUPE) Rusty menziesia (MEFE) Sidebells wintergreen (ORSE) Sitka mountain-ash (SOSIS2) Sitka valerian (VASI) Smooth woodrush (LUGL2)
Sheepskull-----	Alaska cedar Engelmann spruce Mountain hemlock Noble fir Pacific silver fir Sitka alder Subalpine fir	F003XN951WA - <i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i>	Deer fern (BLSP) Devilsclub (OPHO) Oakfern (GYDR) Oregon oxalis (OXOR) Salmonberry (RUSP) Thimbleberry (RUPA) Twinflower (LIBO3) Vine maple (ACCI) Western swordfern (POMU)

Table 12.--Component Setting, Parent Material, and Ecological Site

(Miscellaneous nonsoil components are not given in this table. Percentages of components may not add up to 100 percent.)

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
6100: Comet-----	15	0-15	530-655	1955-2110	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Populus balsamifera ssp. trichocarpa-Tsuga heterophylla/Mahonia nervosa/Goodyera oblongifolia</i> (F003XN940WA)
6101: Comet-----	50	0-20	530-655	1955-2110	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Populus balsamifera ssp. trichocarpa-Tsuga heterophylla/Mahonia nervosa/Goodyera oblongifolia</i> (F003XN940WA)
Carbon-----	35	0-20	530-655	1955-2110	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Populus balsamifera ssp. trichocarpa-Tsuga heterophylla/Mahonia nervosa/Goodyera oblongifolia</i> (F003XN940WA)
Sunbeam-----	10	0-10	530-655	1955-2110	Cascade River valley	Depressions of flood plains and terraces	Volcanic ash	<i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i> (F003XN941WA)
6110: Tokaloo-----	55	0-20	535-810	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis</i> (F003XN942WA)
Kautz-----	25	0-20	535-810	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
6110: Sunbeam-----	20	0-10	535-810	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	<i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i> (F003XN941WA)
6120: Kautz-----	45	5-35	540-870	1855-2110	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-PseudoTsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)
Tokaloo-----	35	5-35	540-870	1855-2110	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis</i> (F003XN942WA)
420 Sunbeam-----	15	5-10	540-870	1855-2110	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	<i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i> (F003XN941WA)
Goldenlakes-----	5	5-35	540-870	1855-2110	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-PseudoTsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)
6125: Tokaloo-----	35	0-35	500-690	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis</i> (F003XN942WA)
Kautz-----	30	0-65	500-690	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-PseudoTsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
6125: Goldenlakes-----	20	0-65	500-690	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)
Sunbeam-----	10	0-10	500-690	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	<i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i> (F003XN941WA)
Ingraham-----	5	0-65	500-690	1855-2055	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over andesite	<i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)
421								
7100: Goldenlakes-----	50	35-100	660-1235	1855-2005	Cascade Mountains	Ridges	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)
Ingraham-----	30	35-100	660-1235	1855-2005	Cascade Mountains	Ridges	Volcanic ash over andesite	<i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)
Kautz-----	15	35-100	660-1235	1855-2005	Cascade Mountains	Ridges	Volcanic ash over colluvium derived from andesite	<i>Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa</i> (F003XN943WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
7110: Kautz-----	40	35-100	495-1415	1805-2110	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-PseudoTsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Goldenlakes-----	35	35-100	495-1415	1805-2110	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-PseudoTsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Tokaloo-----	10	5-35	495-1415	1805-2110	Cascade Mountains	Swales on glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis (F003XN942WA)
Ingraham-----	5	35-100	495-1415	1805-2110	Cascade Mountains	Glacial-valley walls	Volcanic ash over andesite	Tsuga heterophylla-PseudoTsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Sunbeam-----	5	0-10	495-1415	1805-2110	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana (F003XN941WA)
7120: Kautz-----	50	25-65	555-1155	1855-2110	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-PseudoTsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Tokaloo-----	25	25-50	555-1155	1855-2110	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis (F003XN942WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
7120: Goldenlakes-----	15	25-65	555-1155	1855-2110	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Ingraham-----	5	25-65	555-1155	1855-2110	Cascade Mountains	Glacial-valley walls	Volcanic ash over andesite	Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Sunbeam-----	5	0-10	555-1155	1855-2110	Cascade Mountains	Swales on glacial-valley walls	Volcanic ash	Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana (F003XN941WA)
7125: Goldenlakes-----	40	20-65	490-955	1805-2110	Cascade Mountains	Bedrock benches on glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Kautz-----	30	20-65	490-955	1805-2110	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Ingraham-----	15	20-65	490-955	1805-2110	Cascade Mountains	Bedrock benches on glacial-valley walls	Volcanic ash over andesite	Tsuga heterophylla-Pseudotsuga menziesii/Gaultheria shallon-Mahonia nervosa (F003XN943WA)
Tokaloo-----	10	5-25	490-955	1805-2110	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	Tsuga heterophylla-Thuja plicata/Oplopanax horridus-Rubus spectabilis (F003XN942WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
7125: Sunbeam-----	5	0-10	490-955	1805-2110	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	<i>Thuja plicata-Alnus rubra/Lysichiton americanus-Oxalis oregana</i> (F003XN941WA)
8100: Flett-----	25	0-25	630-1405	1345-2770	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Populus balsamifera ssp. trichocarpa-Abies amabilis/Acer circinatum/Polystichum munitum</i> (F003XN944WA)
Narada-----	10	0-10	630-1405	1345-2720	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Populus balsamifera ssp. trichocarpa-Abies amabilis/Acer circinatum/Polystichum munitum</i> (F003XN944WA)
8101: Flett-----	50	0-25	630-1485	1395-2720	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Populus balsamifera ssp. trichocarpa-Abies amabilis/Acer circinatum/Polystichum munitum</i> (F003XN944WA)
Narada-----	35	0-25	630-1485	1395-2720	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Populus balsamifera ssp. trichocarpa-Abies amabilis/Acer circinatum/Polystichum munitum</i> (F003XN944WA)
Frogheaven-----	10	0-10	630-1485	1395-2720	Cascade River valley	Depressions of flood plains and terraces	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
8110: Vantrump-----	40	0-35	635-1380	1345-2720	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8110: Laughingwater----	30	0-35	635-1380	1345-2720	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Longmire-----	15	0-35	635-1380	1345-2720	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Frogheaven-----	10	0-10	635-1380	1345-2720	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
425 Ghost, warm-----	5	0-5	635-1380	1345-2720	Cascade Mountains	Debris aprons on mountain slopes	Organic material and bands of volcanic ash	Southern Washington Cascades Low Cryic Bog or Fen (R003XN640WA)
8120: Longmire-----	35	5-65	610-1455	1295-2565	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Laughingwater----	30	5-65	610-1455	1295-2565	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Vantrump-----	20	5-35	610-1455	1295-2565	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)
Frogheaven-----	10	0-10	610-1455	1295-2565	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8120: Arahustan-----	5	5-65	610-1455	1295-2565	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
8125: Vantrump-----	35	10-65	645-1325	1650-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)
Laughingwater----	25	10-65	645-1325	1650-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Longmire-----	20	10-65	645-1325	1650-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Arahustan-----	10	10-65	645-1325	1650-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Frogheaven-----	5	0-10	645-1325	1650-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
Ohanapecosh-----	5	10-65	645-1325	1650-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
8130: Summerland-----	70	15-100	690-1730	1650-2820	Cascade Mountains	Debris cones on glacial-valley walls	Mixed colluvium and volcanic ash	<i>Alnus viridis ssp. sinuata-Acer circinatum/Sambucus racemosa-Rubus parviflorus</i> (F003XN948WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8130: Longmire-----	15	15-100	690-1730	1650-2820	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Vantrump-----	10	5-35	690-1730	1650-2820	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)
Frogheaven-----	5	0-10	690-1730	1650-2820	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
427 8150: Ghost, warm-----	45	0-5	645-1265	1955-2260	Cascade Mountains	Debris aprons on mountain slopes	Organic material and bands of volcanic ash	Southern Washington Cascades Low Cryic Bog or Fen (R003XN640WA)
Frogheaven-----	30	0-10	645-1265	1955-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
Laughingwater----	10	2-10	645-1265	1955-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Vantrump-----	10	0-10	645-1265	1955-2260	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8200: Flett, cold-----	15	5-35	945-1865	1805-3175	Cascade River valley	Flood plains, terraces	Alluvium derived from andesite mixed with volcanic ash	<i>Callitropsis nootkatensis-Alnus viridis</i> var. <i>sinuata</i> / <i>Salix barclayi-Rubus pedatus</i> (F003XN949WA)
8201: Mysticlake-----	50	5-40	1225-1645	1600-2820	Cascade Mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
Unicornpeak-----	25	5-40	1225-1645	1600-2820	Cascade Mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Williwakas-----	15	0-10	1225-1645	1600-2820	Cascade Mountains	Depressions of cirque floors	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Ghost-----	5	0-5	1225-1645	1600-2820	Cascade Mountains	Depressions of cirque floors	Organic material and bands of volcanic ash	Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA)
Owyhigh-----	5	5-40	1225-1645	1600-2820	Cascade Mountains	Cirque floors	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
8203: Glacierisland----	55	10-100	975-2080	2160-2870	Cascade Mountains	Lahar, moraines	Till and lahar deposits	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8203: Sheepskull-----	20	10-100	975-2080	2160-2870	Cascade Mountains	Lahar, moraines	Till and lahar deposits over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Sluiskin-----	15	10-100	975-2080	2160-2870	Cascade Mountains	Lahar, moraines	Till and lahar deposits over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Wonderland-----	10	5-35	975-2080	2160-2870	Cascade Mountains	Lahar, moraines	Till and lahar deposits	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
429								
8210: Mysticlake-----	45	5-40	1090-1745	1500-2820	Cascade mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
Unicornpeak-----	30	5-40	1090-1745	1500-2820	Cascade mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Tipsoo-----	15	5-40	1090-1745	1500-2820	Cascade mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Ghost-----	10	0-5	1090-1745	1500-2820	Cascade mountains	Depressions of cirque floors	Organic material and bands of volcanic ash	Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8211: Owyhigh-----	50	10-50	1270-1875	1855-2360	Cascade mountains	Cirque floors	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Mysticlake-----	25	10-40	1270-1875	1855-2360	Cascade Mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
Williwakas-----	15	0-10	1270-1875	1855-2360	Cascade mountains	Depressions of cirque floors	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Ipsut-----	5	10-50	1270-1875	1855-2360	Cascade Mountains	Cirque floors	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Mountwow-----	5	5-15	1270-1875	1855-2360	Cascade Mountains	Cirque floors	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
8220: Tipsoo-----	35	10-55	1050-1845	1450-2920	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Unicornpeak-----	30	10-55	1050-1845	1450-2920	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8220: Mysticlake-----	20	10-55	1050-1845	1450-2920	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
Williwakas-----	10	0-10	1050-1845	1450-2920	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Owyhigh-----	5	10-55	1050-1845	1450-2920	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
431								
8225: Mysticlake-----	35	10-55	1185-1865	1550-2465	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
Unicornpeak-----	25	10-55	1185-1865	1550-2465	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Tipsoo-----	20	10-55	1185-1865	1550-2465	Cascade Mountains	Debris aprons on mountain slopes	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Owyhigh-----	10	10-55	1185-1865	1550-2465	Cascade mountains	Debris aprons on mountain slopes	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8225: Ipsut-----	5	10-55	1185-1865	1550-2465	Cascade mountains	Debris aprons on mountain slopes	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
Williwakas-----	5	0-10	1185-1865	1550-2465	Cascade mountains	Debris aprons on mountain slopes	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
8230: Summerland, cold	70	15-100	1010-2110	1500-2970	Cascade mountains	Debris cones on glacial-valley walls	Mixed colluvium and volcanic ash	<i>Alnus viridis</i> ssp. <i>sinuata</i> - <i>Acer circinatum</i> / <i>Sorbus sitchensis</i> / <i>Veratrum viride</i> (F003XN952WA)
432 Tipsoo-----	15	15-100	1010-2110	1500-2970	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
Wonderland-----	10	5-35	1010-2110	1500-2970	Cascade Mountains	Swales of glacial-valley walls	Mixed colluvium and till	<i>Tsuga mertensiana</i> - <i>Callitropsis nootkatensis</i> / <i>Rhododendron albiflorum</i> - <i>Rubus lasiococcus</i> (F003XN950WA)
Glacierisland----	5	15-100	1010-2110	1500-2970	Cascade Mountains	Glacial-valley walls	Mixed colluvium and till	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
8250: Ghost-----	35	0-10	1165-1775	2055-2920	Cascade Mountains	Depressions of cirque floors	Organic material and bands of volcanic ash	Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8250: Williwakas-----	30	0-10	1165-1770	2055-2920	Cascade Mountains	Depressions of cirque floors	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Mountwow, moist--	20	0-20	1165-1770	2055-2920	Cascade Mountains	Cirque floors	Volcanic ash over colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Unicornpeak-----	10	0-20	1165-1770	2055-2920	Cascade Mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
433								
8251: Mountwow, moist--	50	5-40	1110-1890	2055-2970	Cascade Mountains	Cirque floors	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN541W)
Williwakas-----	25	0-10	1100-1890	2055-2970	Cascade Mountains	Depressions of cirque floors	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Unicornpeak-----	15	5-40	1100-1890	2055-2970	Cascade Mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
Ghost-----	10	0-5	1100-1890	2055-2970	Cascade Mountains	Depressions of cirque floors	Organic material and bands of volcanic ash	Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA)
8252: Mountwow, moist--	45	5-55	1305-1965	2160-2820	Cascade Mountains	Cirques	Volcanic ash over colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Unicornpeak-----	20	5-55	1305-1965	2160-2820	Cascade Mountains	Cirques	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8252: Williwakas-----	15	0-10	1305-1965	2160-2820	Cascade Mountains	Depressions of cirques	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Owyhigh-----	10	5-55	1305-1965	2160-2820	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
8255: Ghost-----	35	0-10	1300-1785	1650-2565	Cascade Mountains	Depressions of cirque floors	Organic material and bands of volcanic ash	Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA)
Williwakas-----	30	0-10	1300-1785	1650-2565	Cascade Mountains	Depressions of cirque floors	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Mountwow-----	20	0-20	1300-1785	1650-2565	Cascade Mountains	Cirque floors	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Unicornpeak-----	10	0-20	1300-1785	1650-2565	Cascade Mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
8256: Mountwow-----	50	0-30	1210-1980	1600-2820	Cascade Mountains	Cirque floors	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Williwakas-----	20	0-10	1210-1980	1600-2820	Cascade Mountains	Depressions of cirque floors	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
8256: Unicornpeak-----	15	5-30	1210-1980	1600-2820	Cascade Mountains	Cirque floors	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Wahpenayo-----	10	5-30	1210-1980	1600-2820	Cascade Mountains	Cirque floors	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Ghost-----	5	0-5	1210-1980	1600-2820	Cascade Mountains	Depressions of cirque floors	Organic material and bands of volcanic ash	Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA)
8257: Wahpenayo-----	40	10-45	1255-2015	1550-2920	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Mountwow-----	25	10-45	1255-2015	1550-2920	Cascade Mountains	Cirques	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Williwakas-----	15	0-10	1255-2015	1550-2920	Cascade Mountains	Depressions of cirques	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
Owyhigh-----	10	10-45	1255-2015	1550-2920	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Unicornpeak-----	10	10-45	1255-2015	1550-2920	Cascade Mountains	Cirques	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9100: Arahustan-----	50	15-100	725-1755	1295-2665	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Ohanapecosh-----	25	15-100	725-1755	1295-2665	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Longmire-----	15	15-100	725-1755	1295-2665	Cascade Mountains	Ridges	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Vantrump-----	5	5-20	725-1755	1295-2665	Cascade Mountains	Swales of ridges	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)
436								
9101: Ohanapecosh-----	50	20-100	690-1800	1450-2770	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Arahustan-----	25	20-100	690-1800	1450-2770	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Summerland-----	15	20-100	690-1800	1450-2770	Cascade Mountains	Talus slopes	Mixed colluvium and volcanic ash	<i>Alnus viridis ssp. sinuata-Acer circinatum/Sambucus racemosa-Rubus parviflorus</i> (F003XN948WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9110: Longmire-----	45	35-100	550-1700	1295-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Arahustan-----	35	35-100	550-1700	1295-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Frogheaven-----	5	0-10	550-1700	1295-2870	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
437 Ohanapecosh-----	5	35-100	550-1700	1295-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Vantrump-----	5	5-35	550-1700	1295-2870	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)
9120: Longmire-----	45	20-65	650-1705	1395-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Arahustan-----	25	20-65	650-1705	1395-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Vantrump-----	20	20-35	650-1705	1395-2870	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9120: Frogheaven-----	5	0-10	650-1705	1395-2870	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
Ohanapecosh-----	5	20-65	650-1705	1395-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
9125: Longmire-----	40	15-65	660-1485	1650-2465	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Arahustan-----	25	15-65	660-1485	1650-2465	Cascade Mountains	Bedrock benches on glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Ohanapecosh-----	15	15-65	660-1485	1650-2465	Cascade mountains	Bedrock benches on glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)
Vantrump-----	10	0-25	660-1485	1650-2465	Cascade mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Thuja plicata/Oplopanax horridus/Polystichum munitum</i> (F003XN946WA)
Frogheaven-----	5	0-5	660-1485	1650-2465	Cascade mountains	Swales of glacial-valley walls	Volcanic ash	<i>Thuja plicata-Alnus rubra/Oplopanax horridus/Lysichiton americanus</i> (F003XN945WA)
Laughingwater----	5	5-30	660-1485	1650-2465	Cascade mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Abies amabilis-Tsuga heterophylla/Vaccinium membranaceum/Linnaea borealis</i> (F003XN947WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9200: Owyhigh-----	50	25-100	1040-1975	1450-2870	Cascade mountains	Ridges	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Ipsut-----	25	25-100	1040-1975	1450-2870	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Tipsoo-----	15	25-100	1040-1975	1450-2870	Cascade Mountains	Ridges	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
439 Unicornpeak-----	5	10-30	1040-1975	1450-2870	Cascade Mountains	Swales of ridges	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
9201: Sluiskin-----	40	25-100	980-2170	1395-3175	Cascade Mountains	Talus slopes	Till and lahar deposits over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Owyhigh-----	25	25-100	980-2170	1395-3175	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Summerland, cold	15	25-100	980-2170	1395-3175	Cascade Mountains	Talus slopes	Mixed colluvium and volcanic ash	<i>Alnus viridis ssp. sinuata-Acer circinatum/Sorbus sitchensis/Veratrum viride</i> (F003XN952WA)
9210: Tipsoo-----	45	35-100	1015-2045	1345-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9210: Owyhigh-----	35	35-100	1015-2045	1345-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Ipsut-----	5	35-100	1015-2045	1345-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Mysticlake-----	5	5-35	1015-2045	1345-3175	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
440 Williwakas-----	5	0-10	1015-2045	1345-3175	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
9220: Tipsoo-----	45	20-65	1030-2025	1450-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Owyhigh-----	25	20-65	1030-2025	1450-2920	Cascade Mountains	Glacial-valley wall	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Mysticlake-----	20	20-55	1030-2025	1450-2920	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9220: Ipsut-----	5	20-65	1030-2025	1450-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Williwakas-----	5	0-10	1030-2025	1450-2920	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
9225: Owyhigh-----	40	15-65	1030-1880	1805-2920	Cascade Mountains	Bedrock benches on glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
441 Tipsoo-----	25	15-65	1030-1880	1805-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Ipsut-----	15	15-65	1030-1880	1805-2920	Cascade Mountains	Bedrock benches on glacial-valley walls	Volcanic ash and colluvium over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Mysticlake-----	10	5-35	1030-1880	1805-2920	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
Unicornpeak-----	5	5-35	1030-1880	1805-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Williwakas-----	5	0-10	1030-1880	1805-2920	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9250: Burroughs, moist	45	15-100	1150-2010	2110-3430	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Littleahoma, moist-----	20	15-100	1150-2010	2110-3430	Cascade Mountains	Ridges	Volcanic ash over colluvium derived from andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Tatoosh, moist---	20	15-100	1150-2010	2110-3430	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Mountwow, moist--	10	5-35	1150-2010	2110-3430	Cascade Mountains	Swales of ridges	Volcanic ash over colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
9251: Sarvant, moist---	45	20-100	1155-2125	2005-3430	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Chenuis, moist---	25	20-100	1155-2125	2005-3430	Cascade Mountains	Ridges	Volcanic ash and colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Tatoosh, moist---	20	20-100	1155-2125	2005-3430	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
9252: Littleahoma, moist-----	40	25-100	1320-1990	2160-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Burroughs, moist	25	25-100	1320-1990	2160-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Mountwow, moist--	15	20-50	1320-1990	2160-3175	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
443	Pct	Pct	Meters	mm				
9252: Tatoosh, moist---	10	25-100	1320-1990	2160-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Unicornpeak-----	5	25-65	1320-1990	2160-3175	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
9253: Mountwow, moist--	40	10-50	1330-1960	2160-3175	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Littleahoma, moist-----	30	10-65	1330-1960	2160-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Unicornpeak-----	15	10-65	1330-1960	2160-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
Burroughs, moist	10	10-65	1330-1960	2160-3175	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Williwakas-----	5	0-10	1330-1960	2160-3175	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
9254: Chenuis, moist---	40	10-65	1340-1955	2160-2515	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Sarvant, moist---	25	10-65	1340-1955	2160-2515	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9254: Mountwow, moist--	15	10-50	1340-1955	2160-2515	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Unicornpeak-----	10	10-65	1340-1955	2160-2515	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
Tatoosh, moist---	5	10-65	1340-1955	2160-2515	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA)
Williwakas-----	5	0-10	1340-1955	2160-2515	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
444 9255: Burroughs-----	50	30-100	1190-2125	1550-2820	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Littletahoma-----	20	30-100	1190-2125	1550-2820	Cascade Mountains	Ridges	Volcanic ash over colluvium derived from andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Tatoosh-----	15	15-100	1190-2125	1550-2820	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Mountwow-----	10	5-35	1190-2125	1550-2820	Cascade Mountains	Swales of ridges	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
9256: Chenuis-----	50	25-100	1110-2265	1550-2920	Cascade Mountains	Ridges	Volcanic ash and colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9256: Sarvant-----	30	25-100	1110-2265	1550-2920	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Tatoosh-----	10	25-100	1110-2265	1550-2920	Cascade Mountains	Ridges	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
9257: Littletahoma-----	50	25-100	1370-2085	1755-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Burroughs-----	20	25-100	1370-2085	1755-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Mountwow-----	15	15-50	1370-2085	1755-2920	Cascade Mountains	Swales on glacial-valley walls	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Tatoosh-----	10	25-100	1370-2085	1755-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
9258: Mountwow-----	35	15-50	1405-2030	1700-2920	Cascade Mountains	Swales on glacial-valley walls	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Littletahoma-----	25	15-55	1405-2030	1700-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9258: Wahpenayo-----	15	15-55	1405-2030	1700-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Burroughs-----	10	15-55	1405-2030	1700-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Unicornpeak-----	10	15-55	1405-2030	1700-2920	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)
Williwakas-----	5	0-10	1405-2030	1700-2920	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
446								
9259: Chenuis-----	40	15-65	1450-2140	1755-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Sarvant-----	25	15-65	1450-2140	1755-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Mountwow-----	15	10-50	1450-2140	1755-2870	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash over colluvium	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Unicornpeak-----	10	15-65	1450-2140	1755-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash over colluvium derived from andesite	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9259: Tatoosh-----	5	15-65	1450-2140	1755-2870	Cascade Mountains	Glacial-valley walls	Volcanic ash and colluvium over andesite	Southern Washington Cascades Subalpine Parkland (R003XN542WA)
Williwakas-----	5	0-10	1450-2140	1755-2870	Cascade Mountains	Swales of glacial-valley walls	Volcanic ash	Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA)
9260: Mountwow, alpine-	45	5-50	1400-2280	2310-3935	Cascade Mountains	Swales of cirques	Volcanic ash over colluvium	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Chenuis, alpine--	20	5-50	1400-2280	2310-3935	Cascade Mountains	Cirques	Volcanic ash and colluvium	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Meany-----	15	5-25	1400-2280	2310-3935	Cascade Mountains	Swales of cirques	Mixed volcanic ash and glacial till	Southern Washington Cascades Wet Alpine Tundra (R003XN544WA)
Wahpenayo, alpine	10	5-50	1400-2280	2310-3935	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	Southern Washington Cascades Alpine Tundra (R003XN543WA)
9261: Wahpenayo, alpine	45	5-55	1700-2390	2260-3685	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Burroughs, alpine	20	5-55	1700-2390	2260-3685	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Mountwow, alpine	15	5-50	1700-2390	2260-3685	Cascade Mountains	Swales on cirques	Volcanic ash over colluvium	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Chenuis, alpine--	10	5-55	1700-2390	2260-3685	Cascade Mountains	Cirques	Volcanic ash and colluvium	Southern Washington Cascades Alpine Tundra (R003XN543WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
	Pct	Pct	Meters	mm				
9261: Meany-----	10	5-25	1700-2390	2260-3685	Cascade Mountains	Swales on cirques	Mixed volcanic ash and glacial till	Southern Washington Cascades Wet Alpine Tundra (R003XN544WA)
9262: Sarvant, alpine--	40	15-100	1580-2340	2210-3935	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Wahpenayo, alpine	25	15-50	1580-2340	2210-3935	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Mountwow, alpine	15	15-50	1580-2340	2210-3935	Cascade Mountains	Swales of cirques	Volcanic ash over colluvium	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Chenuis, alpine--	10	15-100	1580-2340	2210-3935	Cascade Mountains	Cirques	Volcanic ash and colluvium	Southern Washington Cascades Alpine Tundra (R003XN543WA)
Tatoosh, alpine--	5	35-100	1580-2340	2210-3935	Cascade Mountains	Cirques	Volcanic ash and colluvium over andesite	Southern Washington Cascades Alpine Tundra (R003XN543WA)
9263: Tamanos-----	80	10-65	1075-2205	2300-3600	Cascade Mountains	Alpine glaciers	Colluvium over massive ice	Southern Washington Cascades Debris Covered Glaciers (R003XN545WA)
9993: Sluiskin-----	10	15-100	1075-2420	1805-3685	Cascade Mountains	Talus slopes	Mixed colluvium and till	<i>Tsuga mertensiana</i> - <i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> / <i>Xerophyllum tenax</i> (F003XN951WA)

Table 12.--Component Setting, Parent Material, and Ecological Site--Continued

Map unit symbol and soil name	Percent of map unit	Slope	Elevation	Mean annual precipitation	Landscape	Landform	Parent material	Ecological site name and number
9993: Summerland, cold	5	Pct 15-100	Meters 1075-2420	mm 1805-3685	Cascade Mountains	Talus slopes	Mixed colluvium and volcanic ash	<i>Alnus viridis ssp. sinuata-Acer circinatum/Sorbus sitchensis/Veratrum viride</i> (F003XN952WA)
9994: Glacierisland----	25	15-100	1265-2420	2415-3935	Cascade Mountains	Moraines	Till and lahar deposits	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
Wonderland-----	15	15-50	1265-2420	2415-3935	Cascade Mountains	Moraines	Till and lahar deposits	<i>Tsuga mertensiana-Callitropsis nootkatensis/Rhododendron albiflorum-Rubus lasiococcus</i> (F003XN950WA)
Sheepskull-----	10	15-100	1265-2420	2415-3935	Cascade Mountains	Moraines	Till and lahar deposits over andesite	<i>Tsuga mertensiana-Abies lasiocarpa/Menziesia ferruginea/Xerophyllum tenax</i> (F003XN951WA)
9996: Tatoosh, volcanic cone-----	10	15-100	1450-3350	2515-4700	Cascade Mountains	Ridges, volcanic cone	Volcanic ash and colluvium over andesite	Southern Washington Cascades Alpine Tundra (R003XN543WA)

Soil Survey of Mount Rainier National Park, Washington

**Table 13.--Planting and Soil Rutting Hazard**

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6100: Riverwash-----	80	Not rated		Not rated		Not rated	
Comet-----	15	Moderately suited Sandiness Rock fragments	0.50 0.50	Poorly suited Rock fragments Sandiness Slope	0.75 0.50 0.50	Slight Strength	0.10
6101: Comet-----	50	Moderately suited Sandiness Rock fragments	0.50 0.50	Poorly suited Rock fragments Slope Sandiness	0.75 0.50 0.50	Slight Strength	0.10
Carbon-----	35	Moderately suited Rock fragments	0.50	Moderately suited Rock fragments Slope	0.50 0.50	Slight Strength	0.10
6110: Tokaloo-----	55	Well suited		Moderately suited Slope Rock fragments	0.50 0.50	Moderate Low strength	0.50
Kautz-----	25	Well suited		Moderately suited Slope Rock fragments	0.50 0.50	Moderate Low strength	0.50
Sunbeam-----	20	Moderately suited Wetness	0.50	Moderately suited Slope Rock fragments Wetness	0.50 0.50 0.50	Moderate Low strength Wetness	0.50 0.50
6120: Kautz-----	45	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Tokaloo-----	35	Well suited		Moderately suited Slope Rock fragments	0.50 0.50	Moderate Low strength	0.50
Sunbeam-----	15	Moderately suited Wetness	0.50	Moderately suited Slope Rock fragments Wetness	0.50 0.50 0.50	Moderate Low strength Wetness	0.50 0.50
6125: Tokaloo-----	35	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Kautz-----	30	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6125: Goldenlakes-----	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
7100: Goldenlakes-----	50	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Ingraham-----	30	Unsuited Restrictive layer Slope	1.00 0.50	Unsuited Slope Restrictive layer Rock fragments	1.00 1.00 0.50	Moderate Low strength	0.50
Kautz-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
7110: Kautz-----	40	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Goldenlakes-----	35	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
7120: Kautz-----	50	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Tokaloo-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Goldenlakes-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
7125: Goldenlakes-----	40	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Kautz-----	30	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Ingraham-----	15	Unsuited Restrictive layer Slope	1.00 0.50	Unsuited Slope Restrictive layer Rock fragments	1.00 1.00 0.50	Moderate Low strength	0.50
8100: Riverwash-----	60	Not rated		Not rated		Not rated	
Flett-----	25	Moderately suited Rock fragments	0.50	Moderately suited Rock fragments Slope	0.50 0.50	Slight Strength	0.10

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8101: Flett-----	50	Moderately suited Rock fragments	0.50	Moderately suited Rock fragments Slope	0.50 0.50	Slight Strength	0.10
Narada-----	35	Well suited		Moderately suited Slope	0.50	Moderate Low strength	0.50
8110: Vantrump-----	40	Well suited		Poorly suited Slope	0.75	Moderate Low strength	0.50
Laughingwater-----	30	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Longmire-----	15	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
8120: Longmire-----	35	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Laughingwater-----	30	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Vantrump-----	20	Well suited		Moderately suited Slope	0.50	Moderate Low strength	0.50
8125: Vantrump-----	35	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50
Laughingwater-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Longmire-----	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
8130: Summerland-----	70	Moderately suited Slope Sandiness Rock fragments	0.50 0.50 0.50	Unsuited Slope Rock fragments Sandiness	1.00 0.50 0.50	Slight Strength	0.10
Longmire-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
8150: Ghost, warm-----	45	Moderately suited Wetness	0.50	Poorly suited Wetness	0.75	Severe Low strength Wetness	1.00 0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8150: Frogheaven-----	30	Moderately suited Wetness	0.50	Moderately suited Wetness Slope Rock fragments	0.50 0.50 0.50	Moderate Low strength Wetness	0.50 0.50
8200: Riverwash-----	80	Not rated		Not rated		Not rated	
Flett, cold-----	15	Moderately suited Rock fragments	0.50	Poorly suited Slope Rock fragments	0.75 0.50	Slight Strength	0.10
8201: Mysticlake-----	50	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Unicornpeak-----	25	Well suited		Poorly suited Slope	0.75	Moderate Low strength	0.50
Williwakas-----	15	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50 0.50
8203: Glacierisland-----	55	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Sheepskull-----	20	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Slight Strength	0.10
Sluiskin-----	15	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.50	Slight Strength	0.10
8210: Mysticlake-----	45	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Unicornpeak-----	30	Well suited		Poorly suited Slope	0.75	Moderate Low strength	0.50
Tipsoo-----	15	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
8211: Owyhigh-----	50	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Mysticlake-----	25	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8211: Williwakas-----	15	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50 0.50
8220: Tipsoo-----	35	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Unicornpeak-----	30	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50
Mysticlake-----	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
8225: Mysticlake-----	35	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Unicornpeak-----	25	Well suited		Unsuited Slope	1.00	Moderate Low strength	0.50
Tipsoo-----	20	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
8230: Summerland, cold----	70	Moderately suited Slope Sandiness Rock fragments	0.50 0.50 0.50	Unsuited Slope Rock fragments Sandiness	1.00 0.50 0.50	Slight Strength	0.10
Tipsoo-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
8250: Ghost-----	35	Moderately suited Wetness	0.50	Poorly suited Wetness	0.75	Severe Low strength Wetness	1.00 0.50
Williwakas-----	30	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50 0.50
Mountwow, moist----	20	Well suited		Moderately suited Slope Rock fragments	0.50 0.50	Moderate Low strength	0.50
8251: Mountwow, moist----	50	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Williwakas-----	25	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50 0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8251: Unicornpeak-----	15	Well suited		Poorly suited Slope	0.75	Moderate Low strength	0.50
8252: Mountwow, moist-----	45	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Unicornpeak-----	20	Well suited		Unsuited Slope	1.00	Moderate Low strength	0.50
Williwakas-----	15	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50
8255: Ghost-----	35	Moderately suited Wetness	0.50	Poorly suited Wetness	0.75	Severe Low strength Wetness	1.00 0.50
Williwakas-----	30	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50 0.50
Mountwow-----	20	Well suited		Moderately suited Slope Rock fragments	0.50 0.50	Moderate Low strength	0.50
8256: Mountwow-----	50	Well suited		Moderately suited Slope Rock fragments	0.50 0.50	Moderate Low strength	0.50
Williwakas-----	20	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50 0.50
Unicornpeak-----	15	Well suited		Moderately suited Slope	0.50	Moderate Low strength	0.50
8257: Wahpenayo-----	40	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Mountwow-----	25	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Williwakas-----	15	Moderately suited Wetness	0.50	Moderately suited Slope Wetness	0.50 0.50	Moderate Low strength Wetness	0.50 0.50
9100: Arahustan-----	50	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9100: Ohanapecosh-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Longmire-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9101: Ohanapecosh-----	50	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Arahustan-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Summerland-----	15	Moderately suited Slope Sandiness Rock fragments	0.50 0.50 0.50	Unsuited Slope Rock fragments Sandiness	1.00 0.50 0.50	Slight Strength	0.10
9110: Longmire-----	45	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Arahustan-----	35	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9120: Longmire-----	45	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Arahustan-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Vantrump-----	20	Well suited		Poorly suited Slope	0.75	Moderate Low strength	0.50
9125: Longmire-----	40	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Arahustan-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Ohanapecosh-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9200: Owyhigh-----	50	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9200: Ipsut-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Tipsoo-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9201: Sluiskin-----	40	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.50	Slight Strength	0.10
Owyhigh-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Summerland, cold----	15	Moderately suited Slope Sandiness Rock fragments	0.50 0.50 0.50	Unsuited Slope Rock fragments Sandiness	1.00 0.50 0.50	Slight Strength	0.10
9210: Tipsoo-----	45	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Owyhigh-----	35	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9220: Tipsoo-----	45	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Owyhigh-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Mysticlake-----	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9225: Owyhigh-----	40	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Tipsoo-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Ipsut-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9250: Burroughs, moist----	45	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9250: Littletahoma, moist	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Tatoosh, moist-----	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9251: Sarvant, moist-----	45	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Slight Strength	0.10
Chenuis, moist-----	25	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 1.00	Moderate Low strength	0.50
Tatoosh, moist-----	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9252: Littletahoma, moist	40	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Burroughs, moist----	25	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50
Mountwow, moist-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9253: Mountwow, moist-----	40	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Littletahoma, moist	30	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Unicornpeak-----	15	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50
9254: Chenuis, moist-----	40	Moderately suited Rock fragments Slope	0.50 0.50	Unsuited Slope Rock fragments	1.00 1.00	Moderate Low strength	0.50
Sarvant, moist-----	25	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Slight Strength	0.10
Mountwow, moist-----	15	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9255: Burroughs-----	50	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50
Littletahoma-----	20	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Tatoosh-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9256: Chenuis-----	50	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited slope Rock fragments	1.00 1.00	Moderate Low strength	0.50
Sarvant-----	30	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Slight Strength	0.10
9257: Littletahoma-----	50	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Burroughs-----	20	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50
Mountwow-----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9258: Mountwow-----	35	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Littletahoma-----	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Wahpenayo-----	15	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
9259: Chenuis-----	40	Moderately suited Rock fragments Slope	0.50 0.50	Unsuited Slope Rock fragments	1.00 1.00	Moderate Low strength	0.50
Sarvant-----	25	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Slight Strength	0.10
Mountwow-----	15	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9260: Mountwow, alpine----	45	Well suited		Poorly suited Slope Rock fragments	0.75 0.50	Moderate Low strength	0.50
Chenuis, alpine----	20	Moderately suited Rock fragments Slope	0.50 0.50	Unsuited Slope Rock fragments	1.00 1.00	Moderate Low strength	0.50
Meany-----	15	Moderately suited Sandiness Wetness Rock fragments	0.50 0.50 0.50	Poorly suited Rock fragments Slope Wetness Sandiness	0.75 0.50 0.50 0.50	Moderate Wetness Strength	0.50 0.10
9261: Wahpenayo, alpine---	45	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Burroughs, alpine---	20	Moderately suited Slope	0.50	Unsuited Slope	1.00	Moderate Low strength	0.50
Mountwow, alpine----	15	Well suited		Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9262: Sarvant, alpine-----	40	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.75	Slight Strength	0.10
Wahpenayo, alpine---	25	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Mountwow, alpine----	15	Moderately suited Slope	0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
9263: Tamanos-----	80	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50
Glaciers-----	20	Not rated		Not rated		Not rated	
9993: Rubbleland, talus---	50	Not rated		Not rated		Not rated	
Rock outcrop-----	35	Not rated		Not rated		Not rated	
9994: Rubbleland, till----	50	Not rated		Not rated		Not rated	
Glacierisland-----	25	Moderately suited Slope Rock fragments	0.50 0.50	Unsuited Slope Rock fragments	1.00 0.50	Moderate Low strength	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 13.--Planting and Soil Rutting Hazard--Continued

Map symbol and soil name	Pct. of map  unit	Suitability for hand planting		Suitability for mechanical planting		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9994: Wonderland-----	15	Moderately suited Rock fragments	0.50	Poorly suited Slope Rock fragments	0.75 0.75	Slight Strength	0.10
9996: Glaciers-----	45	Not rated		Not rated		Not rated	
Rock outcrop-----	45	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

**Table 14.--Hazard of Erosion and Suitability for Roads**

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6100: Riverwash-----	80	Not rated		Not rated		Not rated	
Comet-----	15	Slight		Slight		Moderately suited Sandiness	0.50
6101: Comet-----	50	Slight		Moderate Slope/erodibility	0.50	Moderately suited Slope Sandiness	0.50 0.50
Carbon-----	35	Slight		Slight		Well suited	
6110: Tokaloo-----	55	Slight		Moderate Slope/erodibility	0.50	Moderately suited Slope	0.50
Kautz-----	25	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Sunbeam-----	20	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
6120: Kautz-----	45	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Tokaloo-----	35	Slight		Moderate Slope/erodibility	0.50	Moderately suited Slope	0.50
Sunbeam-----	15	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness Slope	1.00 1.00 0.50
6125: Tokaloo-----	35	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Kautz-----	30	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Goldenlakes-----	20	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
7100: Goldenlakes-----	50	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Ingraham-----	30	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Kautz-----	15	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
7110: Kautz-----	40	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Goldenlakes-----	35	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
7120: Kautz-----	50	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Tokaloo-----	25	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Goldenlakes-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
7125: Goldenlakes-----	40	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Kautz-----	30	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Ingraham-----	15	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8100: Riverwash-----	60	Not rated		Not rated		Not rated	
Flett-----	25	Moderate Slope/erodibility	0.50	Moderate slope/erodibility	0.50	Poorly suited Slope	1.00
8101: Flett-----	50	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Poorly suited Slope	1.00
Narada-----	35	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8110: Vantrump-----	40	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Laughingwater-----	30	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Longmire-----	15	Moderate Slope/erodibility	0.50	Moderate slope/erodibility	0.50	Poorly suited Slope	1.00
8120: Longmire-----	35	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Laughingwater-----	30	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Vantrump-----	20	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8125: Vantrump-----	35	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Laughingwater-----	25	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Longmire-----	20	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8130: Summerland-----	70	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope Sandiness	1.00 0.50
Longmire-----	15	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8150: Ghost, warm-----	45	Slight		slight		Poorly suited Low strength Ponding Wetness	1.00 1.00 1.00
Frogheaven-----	30	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
8200: Riverwash-----	80	Not rated		Not rated		Not rated	
Flett, cold-----	15	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Poorly suited Slope	1.00
8201: Mysticlake-----	50	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Unicornpeak-----	25	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Williwakas-----	15	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
8203: Glacierisland-----	55	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Sheepskull-----	20	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Sluiskin-----	15	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8210: Mysticlake-----	45	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Unicornpeak-----	30	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8210: Tipsoo-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8211: Owyhigh-----	50	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Mysticlake-----	25	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Williwakas-----	15	slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
8220: Tipsoo-----	35	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Unicornpeak-----	30	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Mysticlake-----	20	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
8225: Mysticlake-----	35	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Unicornpeak-----	25	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Tipsoo-----	20	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
8230: Summerland, cold----	70	Very severe Slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope Sandiness	1.00 0.50
Tipsoo-----	15	Very severe Slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
8250: Ghost-----	35	slight		Slight		Poorly suited Low strength Ponding Wetness	1.00 1.00 1.00
Williwakas-----	30	slight		Moderate slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
Mountwow, moist-----	20	Slight		Moderate slope/erodibility	0.50	Moderately suited Slope	0.50
8251: Mountwow, moist-----	50	Moderate Slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8251: Williwakas-----	25	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
Unicornpeak-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8252: Mountwow, moist-----	45	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Unicornpeak-----	20	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Williwakas-----	15	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
8255: Ghost-----	35	Slight		Slight		Poorly suited Low strength Ponding Wetness	1.00 1.00 1.00
Williwakas-----	30	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
Mountwow-----	20	Slight		Moderate Slope/erodibility	0.50	Moderately suited Slope	0.50
8256: Mountwow-----	50	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Poorly suited Slope	1.00
Williwakas-----	20	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
Unicornpeak-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
8257: Wahpenayo-----	40	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope Wetness	1.00 0.50
Mountwow-----	25	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Williwakas-----	15	Slight		Moderate Slope/erodibility	0.50	Poorly suited Ponding Wetness	1.00 1.00
9100: Arahustan-----	50	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Ohanapecosh-----	25	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9100: Longmire-----	15	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9101: Ohanapecosh-----	50	Very severe Slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Arahustan-----	25	Very severe Slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Summerland-----	15	Very severe Slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope Sandiness	1.00 0.50
9110: Longmire-----	45	Very severe Slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Arahustan-----	35	Very severe Slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
9120: Longmire-----	45	Severe slope/erodibility	0.75	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Arahustan-----	25	Severe slope/erodibility	0.75	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Vantrump-----	20	Moderate slope/erodibility	0.50	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
9125: Longmire-----	40	Severe slope/erodibility	0.75	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Arahustan-----	25	Severe slope/erodibility	0.75	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Ohanapecosh-----	15	Severe slope/erodibility	0.75	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
9200: Owyhigh-----	50	Very severe slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Ipsut-----	25	Very severe slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Tipsoo-----	15	Very severe slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
9201: Sluiskin-----	40	Very severe slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00
Owyhigh-----	25	Very severe slope/erodibility	0.95	Severe slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9201: Summerland, cold----	15	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope Sandiness	1.00 0.50
9210: Tipsoo-----	45	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Owyhigh-----	35	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9220: Tipsoo-----	45	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Owyhigh-----	25	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Mysticlake-----	20	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9225: Owyhigh-----	40	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Tipsoo-----	25	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Ipsut-----	15	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9250: Burroughs, moist---	45	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Littletahoma, moist	20	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Tatoosh, moist-----	20	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9251: Sarvant, moist-----	45	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Chenuis, moist-----	25	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Tatoosh, moist-----	20	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9252: Littletahoma, moist	40	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Burroughs, moist---	25	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Mountwow, moist-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9253: Mountwow, moist-----	40	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Littletahoma, moist	30	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Unicornpeak-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9254: Chenuis, moist-----	40	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Sarvant, moist-----	25	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Mountwow, moist-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9255: Burroughs-----	50	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Littletahoma-----	20	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Tatoosh-----	15	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9256: Chenuis-----	50	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Sarvant-----	30	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9257: Littletahoma-----	50	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Burroughs-----	20	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Mountwow-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9258: Mountwow-----	35	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Littletahoma-----	25	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Wahpenayo-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope Wetness	1.00 0.50

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9259: Chenuis-----	40	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Sarvant-----	25	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Mountwow-----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9260: Mountwow, alpine----	45	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Chenuis, alpine-----	20	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Meany-----	15	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Poorly suited Wetness Slope Sandiness	1.00 1.00 0.50
9261: Wahpenayo, alpine---	45	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope Wetness	1.00 0.50
Burroughs, alpine---	20	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Mountwow, alpine----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9262: Sarvant, alpine-----	40	Severe Slope/erodibility	0.75	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Wahpenayo, alpine---	25	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope Wetness	1.00 0.50
Mountwow, alpine----	15	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
9263: Tamanos-----	80	Moderate Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00
Glaciers-----	20	Not rated		Not rated		Not rated	
9993: Rubbleland, talus---	50	Not rated		Not rated		Not rated	
Rock outcrop-----	35	Not rated		Not rated		Not rated	
9994: Rubbleland, till----	50	Not rated		Not rated		Not rated	
Glacierisland-----	25	Very severe Slope/erodibility	0.95	Severe Slope/erodibility	0.95	Poorly suited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 14.--Hazard of Erosion and Suitability for Roads--Continued

Map symbol and soil name	Pct. of map unit	Hazard of erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9994: Wonderland-----	15	Moderate Slope/erodibility	0.50	Moderate Slope/erodibility	0.50	Poorly suited Slope	1.00
9996: Glaciers-----	45	Not rated		Not rated		Not rated	
Rock outcrop-----	45	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

**Table 15.--Site Preparation**

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6100: Riverwash-----	80	Not rated		Not rated	
Comet-----	15	Well suited		Poorly suited Rock fragments	0.50
6101: Comet-----	50	Well suited		Poorly suited Rock fragments	0.50
Carbon-----	35	Unsuited Wetness	1.00	Poorly suited Rock fragments	0.50
6110: Tokaloo-----	55	Unsuited Wetness	1.00	Well suited	
Kautz-----	25	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Sunbeam-----	20	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
6120: Kautz-----	45	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Tokaloo-----	35	Unsuited Wetness	1.00	Well suited	
Sunbeam-----	15	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
6125: Tokaloo-----	35	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Kautz-----	30	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Goldenlakes-----	20	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50
7100: Goldenlakes-----	50	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Ingraham-----	30	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope Restrictive layer	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
7100: Kautz-----	15	Unsuited Slope	1.00	Unsuited Slope	1.00
7110: Kautz-----	40	Unsuited Slope	1.00	Unsuited Slope	1.00
Goldenlakes-----	35	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
7120: Kautz-----	50	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Tokaloo-----	25	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Goldenlakes-----	15	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50
7125: Goldenlakes-----	40	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Kautz-----	30	Unsuited Slope	1.00	Unsuited Slope	1.00
Ingraham-----	15	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope Restrictive layer	1.00
8100: Riverwash-----	60	Not rated		Not rated	
Flett-----	25	Poorly suited Slope	0.50	Poorly suited Slope Rock fragments	0.50 0.50
8101: Flett-----	50	Poorly suited Slope	0.50	Poorly suited Slope Rock fragments	0.50 0.50
Narada-----	35	Poorly suited Slope	0.50	Poorly suited Slope	0.50
8110: Vantrump-----	40	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Laughingwater-----	30	Poorly suited Slope	0.50	Poorly suited Slope	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8110: Longmire-----	15	Poorly suited Slope	0.50	Poorly suited Slope	0.50
8120: Longmire-----	35	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Laughingwater-----	30	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Vantrump-----	20	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
8125: Vantrump-----	35	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Laughingwater-----	25	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Longmire-----	20	Poorly suited Slope	0.50	Poorly suited Slope	0.50
8130: Summerland-----	70	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Longmire-----	15	Unsuited Slope	1.00	Unsuited Slope	1.00
8150: Ghost, warm-----	45	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
Frogheaven-----	30	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
8200: Riverwash-----	80	Not rated		Not rated	
Flett, cold-----	15	Poorly suited Slope	0.50	Poorly suited Slope Rock fragments	0.50 0.50
8201: Mysticlake-----	50	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Unicornpeak-----	25	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Williwakas-----	15	Unsuited Wetness	1.00	Poorly suited Wetness	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8203: Glacierisland-----	55	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Sheepskull-----	20	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
Sluiskin-----	15	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope Rock fragments	1.00 0.50
8210: Mysticlake-----	45	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Unicornpeak-----	30	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Tipsoo-----	15	Poorly suited Slope	0.50	Poorly suited Slope	0.50
8211: Owyhigh-----	50	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50
Mysticlake-----	25	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Williwakas-----	15	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
8220: Tipsoo-----	35	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Unicornpeak-----	30	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Mysticlake-----	20	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
8225: Mysticlake-----	35	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Unicornpeak-----	25	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Tipsoo-----	20	Poorly suited Slope	0.50	Poorly suited Slope	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8230: Summerland, cold----	70	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Tipsoo-----	15	Unsuited Slope	1.00	Unsuited Slope	1.00
8250: Ghost-----	35	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
Williwakas-----	30	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
Mountwow, moist-----	20	Unsuited Wetness	1.00	Well suited	
8251: Mountwow, moist-----	50	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Williwakas-----	25	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
Unicornpeak-----	15	Poorly suited Slope	0.50	Poorly suited Slope	0.50
8252: Mountwow, moist-----	45	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Unicornpeak-----	20	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Williwakas-----	15	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
8255: Ghost-----	35	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
Williwakas-----	30	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
Mountwow-----	20	Unsuited Wetness	1.00	Well suited	
8256: Mountwow	50	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Williwakas-----	20	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
Unicornpeak-----	15	Poorly suited Slope	0.50	Poorly suited Slope	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8257: Wahpenayo-----	40	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50
Mountwow-----	25	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Williwakas-----	15	Unsuited Wetness	1.00	Poorly suited Wetness	0.50
9100: Arahustan-----	50	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Ohanapecosh-----	25	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope	1.00
Longmire-----	15	Unsuited Slope	1.00	Unsuited Slope	1.00
9101: Ohanapecosh-----	50	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope	1.00
Arahustan-----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Summerland-----	15	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
9110: Longmire-----	45	Unsuited Slope	1.00	Unsuited Slope	1.00
Arahustan-----	35	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
9120: Longmire-----	45	Unsuited Slope	1.00	Unsuited Slope	1.00
Arahustan-----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Vantrump-----	20	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9125: Longmire-----	40	Unsuited Slope	1.00	Unsuited Slope	1.00
Arahustan-----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Ohanapeccosh-----	15	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope	1.00
9200: Owyhigh-----	50	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Ipsut-----	25	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope	1.00
Tipsoo-----	15	Unsuited Slope	1.00	Unsuited Slope	1.00
9201: Sluiskin-----	40	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope Rock fragments	1.00 0.50
Owyhigh-----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Summerland, cold----	15	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
9210: Tipsoo-----	45	Unsuited Slope	1.00	Unsuited Slope	1.00
Owyhigh-----	35	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
9220: Tipsoo-----	45	Unsuited Slope	1.00	Unsuited Slope	1.00
Owyhigh-----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Mysticlake-----	20	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9225: Owyhigh-----	40	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Tipsoo-----	25	Unsuited Slope	1.00	Unsuited Slope	1.00
Ipsut-----	15	Unsuited Restrictive layer Slope	1.00 1.00	Unsuited Slope	1.00
9250: Burroughs, moist----	45	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Littletahoma, moist	20	Unsuited Slope	1.00	Unsuited Slope	1.00
Tatoosh, moist-----	20	Unsuited Slope Restrictive layer	1.00 1.00	Unsuited Slope	1.00
9251: Sarvant, moist-----	45	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
Chenuis, moist-----	25	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Tatoosh, moist-----	20	Unsuited Slope Restrictive layer	1.00 1.00	Unsuited Slope	1.00
9252: Littletahoma, moist	40	Unsuited Slope	1.00	Unsuited Slope	1.00
Burroughs, moist----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Mountwow, moist-----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
9253: Mountwow, moist-----	40	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Littletahoma, moist	30	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Unicornpeak-----	15	Poorly suited Slope	0.50	Poorly suited Slope	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9254: Chenuis, moist-----	40	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Sarvant, moist-----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
Mountwow, moist-----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
9255: Burroughs-----	50	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Littletahoma-----	20	Unsuited Slope	1.00	Unsuited Slope	1.00
Tatoosh-----	15	Unsuited Slope Restrictive layer	1.00 1.00	Unsuited Slope	1.00
9256: Chenuis-----	50	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Sarvant-----	30	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
9257: Littletahoma-----	50	Unsuited Slope	1.00	Unsuited Slope	1.00
Burroughs-----	20	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope	1.00
Mountwow-----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
9258: Mountwow-----	35	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Littletahoma-----	25	Poorly suited Slope	0.50	Poorly suited Slope	0.50
Wahpenayo-----	15	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9259:					
Chenuis-----	40	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Sarvant-----	25	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
Mountwow-----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
9260:					
Mountwow, alpine---	45	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
Chenuis, alpine----	20	Poorly suited Slope	0.50	Poorly suited Slope Rock fragments	0.50 0.50
Meany-----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Wetness Slope Rock fragments	0.50 0.50 0.50
9261:					
Wahpenayo, alpine---	45	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50
Burroughs, alpine---	20	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50
Mountwow, alpine----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
9262:					
Sarvant, alpine----	40	Unsuited Slope Restrictive layer	1.00 0.50	Unsuited Slope Rock fragments	1.00 0.50
Wahpenayo, alpine---	25	Poorly suited Slope Restrictive layer	0.50 0.50	Poorly suited Slope	0.50
Mountwow, alpine----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope	0.50
9263:					
Tamanos-----	80	Poorly suited Slope	0.50	Poorly suited Slope Rock fragments	0.50 0.50
Glaciers-----	20	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

Table 15.--Site Preparation--Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (deep)		Suitability for mechanical site preparation (surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9993:					
Rubbleland, talus---	50	Not rated		Not rated	
Rock outcrop-----	35	Not rated		Not rated	
9994:					
Rubbleland, till----	50	Not rated		Not rated	
Glacierisland-----	25	Unsuited Slope	1.00	Unsuited Slope Rock fragments	1.00 0.50
Wonderland-----	15	Unsuited Wetness Slope	1.00 0.50	Poorly suited Slope Rock fragments	0.50 0.50
9996:					
Glaciers-----	45	Not rated		Not rated	
Rock outcrop-----	45	Not rated		Not rated	
W:					
Water-----	100	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

**Table 16.--Site Restoration**

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map unit symbol and soil name	Pct. of map	Potential for damage to soil by fire		Potential for seedling mortality	
		unit	Rating class and limiting features	Value	Rating class and limiting features
6100: Riverwash-----	80	Not rated		Not rated	
Comet-----	15	Low		Low	
6101: Comet-----	50	Low		Low	
Carbon-----	35	Low		Low	
6110: Tokaloo-----	55	Low		High Wetness	1.00
Kautz-----	25	Low		Low	
Sunbeam-----	20	Low		High Wetness	1.00
6120: Kautz-----	45	Low		Low	
Tokaloo-----	35	Low		High Wetness	1.00
Sunbeam-----	15	Low		High Wetness	1.00
6125: Tokaloo-----	35	Low		High Wetness	1.00
Kautz-----	30	Low		Low	
Goldenlakes-----	20	Low		Low	
7100: Goldenlakes-----	50	Low		Low	
Ingraham-----	30	High Texture/slope/ surface layer thickness	1.00	Low	
Kautz-----	15	Low		Low	
7110: Kautz-----	40	Low		Low	
Goldenlakes-----	35	Low		Low	

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
7120: Kautz-----	50	Low		Low	
Tokaloo-----	25	Low		Moderate Wetness	0.50
Goldenlakes-----	15	Low		Low	
7125: Goldenlakes-----	40	Low		Low	
Kautz-----	30	Low		Low	
Ingraham-----	15	High Texture/slope/ surface layer thickness	1.00	Low	
8100: Riverwash-----	60	Not rated		Not rated	
Flett-----	25	High Texture/rock fragments	1.00	Low	
8101: Flett-----	50	High Texture/rock fragments	1.00	Low	
Narada-----	35	Low		Low	
8110: Vantrump-----	40	Low		High Wetness	1.00
Laughingwater-----	30	Low		Low	
Longmire-----	15	Low		Low	
8120: Longmire-----	35	Low		Low	
Laughingwater-----	30	Low		Low	
Vantrump-----	20	Low		High Wetness	1.00
8125: Vantrump-----	35	Low		Moderate Wetness	0.50
Laughingwater-----	25	Low		Low	
Longmire-----	20	Low		Low	
8130: Summerland-----	70	Low		Low	
Longmire-----	15	Low		Low	

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8150: Ghost, warm-----	45	Low		High Wetness	1.00
Frogheaven-----	30	Low		High Wetness	1.00
8200: Riverwash-----	80	Not rated		Not rated	
Flett, cold-----	15	High Texture/rock fragments	1.00	Low	
8201: Mysticlake-----	50	Low		High Wetness	1.00
Unicornpeak-----	25	Low		Moderate Wetness	0.50
Williwakas-----	15	Moderate Texture/rock fragments	0.50	High Wetness	1.00
8203: Glacierisland-----	55	Low		Low	
Sheepskull-----	20	High Texture/rock fragments	1.00	Low	
Sluiskin-----	15	High Texture/slope/rock fragments	1.00	Low	
8210: Mysticlake-----	45	Low		High Wetness	1.00
Unicornpeak-----	30	Low		Moderate Wetness	0.50
Tipsoo-----	15	Low		Low	
8211: Owyhigh-----	50	Low		Low	
Mysticlake-----	25	Low		High Wetness	1.00
Williwakas-----	15	Moderate Texture/rock fragments	0.50	High Wetness	1.00
8220: Tipsoo-----	35	Low		Low	
Unicornpeak-----	30	Low		Moderate Wetness	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8220: Mysticlake-----	20	Low		Moderate Wetness	0.50
8225: Mysticlake-----	35	Low		Moderate Wetness	0.50
Unicornpeak-----	25	Low		Moderate Wetness	0.50
Tipsoo-----	20	Low		Low	
8230: Summerland, cold---	70	Low		Low	
Tipsoo-----	15	Low		Low	
8250: Ghost-----	35	Low		High Wetness	1.00
Williwakas-----	30	Moderate Texture/rock fragments	0.50	High Wetness	1.00
Mountwow, moist----	20	Moderate Texture/surface layer thickness/ rock fragments	0.50	High Wetness	1.00
8251: Mountwow, moist----	50	Moderate Texture/surface layer thickness/ rock fragments	0.50	High Wetness	1.00
Williwakas-----	25	Moderate Texture/rock fragments	0.50	High Wetness	1.00
Unicornpeak-----	15	Low		Moderate Wetness	0.50
8252: Mountwow, moist----	45	High Texture/slope/ surface layer thickness	1.00	Moderate Wetness	0.50
Unicornpeak-----	20	Low		Moderate Wetness	0.50
Williwakas-----	15	Moderate Texture/rock fragments	0.50	High Wetness	1.00
8255: Ghost-----	35	Low		High Wetness	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8255: Williwakas-----	30	Moderate Texture/rock fragments	0.50	High Wetness	1.00
Mountwow-----	20	Moderate Texture/surface layer thickness/ rock fragments	0.50	High Wetness	1.00
8256: Mountwow-----	50	Moderate Texture/surface layer thickness/ rock fragments	0.50	High Wetness	1.00
Williwakas-----	20	Moderate Texture/rock fragments	0.50	High Wetness	1.00
Unicornpeak-----	15	Low		Moderate Wetness	0.50
8257: Wahpenayo-----	40	Low		High Wetness	1.00
Mountwow-----	25	High Texture/slope/ surface layer thickness	1.00	Moderate Wetness	0.50
Williwakas-----	15	Moderate Texture/rock fragments	0.50	High Wetness	1.00
9100: Arahustan-----	50	Moderate Texture/slope/rock fragments	0.50	Low	
Ohanapecosh-----	25	Moderate Texture/slope/rock fragments	0.50	Low	
Longmire-----	15	Low		Low	
9101: Ohanapecosh-----	50	Moderate Texture/slope/rock fragments	0.50	Low	
Arahustan-----	25	Moderate Texture/slope/rock fragments	0.50	Low	
Summerland-----	15	Low		Low	

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9110: Longmire-----	45	Low		Low	
Arahustan-----	35	Moderate Texture/slope/rock fragments	0.50	Low	
9120: Longmire-----	45	Low		Low	
Arahustan-----	25	Moderate Texture/slope/rock fragments	0.50	Low	
Vantrump-----	20	Low		High Wetness	1.00
9125: Longmire-----	40	Low		Low	
Arahustan-----	25	Moderate Texture/slope/rock fragments	0.50	Low	
Chanapecosh-----	15	Moderate Texture/slope/rock fragments	0.50	Low	
9200: Owyhigh-----	50	Low		Low	
Ipsut-----	25	High Texture/slope/ surface layer thickness	1.00	Low	
Tipsoo-----	15	Low		Low	
9201: Sluiskin-----	40	High Texture/slope/rock fragments	1.00	Low	
Owyhigh-----	25	Low		Low	
Summerland, cold----	15	Low		Low	
9210: Tipsoo-----	45	Low		Low	
Owyhigh-----	35	Low		Low	
9220: Tipsoo-----	45	Low		Low	
Owyhigh-----	25	Low		Low	
Mysticlake-----	20	Low		Moderate Wetness	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9225: Owyhigh-----	40	Low		Low	
Tipsoo-----	25	Low		Low	
Ipsut-----	15	High Texture/slope/ surface layer thickness	1.00	Low	
9250: Burroughs, moist----	45	Low		Low	
Littletahoma, moist	20	Low		Low	
Tatoosh, moist-----	20	Low		Low	
9251: Sarvant, moist-----	45	Low		Low	
Chenuis, moist-----	25	Low		Low	
Tatoosh, moist-----	20	Low		Low	
9252: Littletahoma, moist	40	Low		Low	
Burroughs, moist----	25	Low		Low	
Mountwow, moist-----	15	High Texture/slope/ surface layer thickness	1.00	Moderate Wetness	0.50
9253: Mountwow, moist-----	40	Moderate Texture/surface layer thickness/ rock fragments	0.50	Moderate Wetness	0.50
Littletahoma, moist	30	Low		Low	
Unicornpeak-----	15	Low		Moderate Wetness	0.50
9254: Chenuis, moist-----	40	Low		Low	
Sarvant, moist-----	25	Low		Low	
Mountwow, moist-----	15	Moderate Texture/surface layer thickness/ rock fragments	0.50	Moderate Wetness	0.50
9255: Burroughs	50	Low		Low	
Littletahoma-----	20	Low		Low	
Tatoosh-----	15	Low		Low	

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9256: Chenuis-----	50	Low		Low	
Sarvant-----	30	Low		Low	
9257: Littletahoma-----	50	Low		Low	
Burroughs-----	20	Low		Low	
Mountwow-----	15	High Texture/slope/ surface layer thickness	1.00	Moderate Wetness	0.50
9258: Mountwow-----	35	Moderate Texture/surface layer thickness/ rock fragments	0.50	Moderate Wetness	0.50
Littletahoma-----	25	Low		Low	
Wahpenayo-----	15	Low		High Wetness	1.00
9259: Chenuis-----	40	Low		Low	
Sarvant-----	25	Low		Low	
Mountwow-----	15	Moderate Texture/surface layer thickness/ rock fragments	0.50	Moderate Wetness	0.50
9260: Mountwow, alpine---	45	High Texture/surface layer thickness/ rock fragments	1.00	Moderate Wetness	0.50
Chenuis, alpine----	20	Low		Low	
Meany-----	15	High Texture/rock fragments	1.00	High Wetness	1.00
9261: Wahpenayo, alpine---	45	Low		High Wetness	1.00
Burroughs, alpine---	20	Low		Low	
Mountwow, alpine---	15	High Texture/slope/ surface layer thickness	1.00	Moderate Wetness	0.50

Soil Survey of Mount Rainier National Park, Washington

Table 16.--Site Restoration--Continued

Map unit symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9262: Sarvant, alpine-----	40	Low		Low	
Wahpenayo, alpine---	25	Low		High Wetness	1.00
Mountwow, alpine-----	15	High Texture/slope/ surface layer thickness	1.00	Moderate Wetness	0.50
9263: Tamanos-----	80	High Texture/slope/rock fragments	1.00	Low	
Glaciers-----	20	Not rated		Not rated	
9993: Bubbleland, talus---	50	Not rated		Not rated	
Rock outcrop-----	35	Not rated		Not rated	
9994: Bubbleland, till----	50	Not rated		Not rated	
Glacierisland-----	25	Low		Low	
Wonderland-----	15	High Texture/surface layer thickness/ rock fragments	1.00	Moderate Wetness	0.50
9996: Glaciers-----	45	Not rated		Not rated	
Rock outcrop-----	45	Not rated		Not rated	
W: Water-----	100	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

**Table 17.--Camp and Picnic Areas**

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6100: Riverwash-----	80	Not rated		Not rated	
Comet-----	15	Very limited Flooding Gravel content	1.00 1.00	Very limited Gravel content	1.00
6101: Comet-----	50	Very limited Flooding Gravel content Slope	1.00 1.00 0.16	Very limited Gravel content Slope	1.00 0.16
Carbon-----	35	Very limited Flooding Gravel content Depth to saturated zone	1.00 1.00 0.72	Very limited Gravel content Depth to saturated zone	1.00 0.39
6110: Tokaloo-----	55	Very limited Depth to saturated zone Slope	1.00 0.16	Very limited Depth to saturated zone Slope	1.00 0.16
Kautz-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Sunbeam-----	20	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
6120: Kautz-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Tokaloo-----	35	Very limited Depth to saturated zone Slope	1.00 0.16	Very limited Depth to saturated zone Slope	1.00 0.16
Sunbeam-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
6125: Tokaloo-----	35	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6125: Kautz-----	30	Very limited Slope	1.00	Very limited Slope	1.00
Goldenlakes-----	20	Very limited Slope	1.00	Very limited Slope	1.00
7100: Goldenlakes-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Ingraham-----	30	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00
Kautz-----	15	Very limited Slope	1.00	Very limited Slope	1.00
7110: Kautz-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Goldenlakes-----	35	Very limited Slope	1.00	Very limited Slope	1.00
7120: Kautz-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Tokaloo-----	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
Goldenlakes-----	15	Very limited Slope	1.00	Very limited Slope	1.00
7125: Goldenlakes-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Kautz-----	30	Very limited Slope	1.00	Very limited Slope	1.00
Ingraham-----	15	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00
8100: Riverwash-----	60	Not rated		Not rated	
Flett-----	25	Very limited Flooding Slope Large stones content	1.00 1.00 0.23	Very limited Slope Large stones content	1.00 0.23

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8101: Flett-----	50	Very limited Flooding Slope Large stones content	1.00 1.00 0.23	Very limited Slope Large stones content	1.00 0.23
Narada-----	35	Very limited Flooding Slope Depth to saturated zone	1.00 1.00 0.20	Very limited Slope Depth to saturated zone	1.00 0.10
8110: Vantrump-----	40	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Laughingwater-----	30	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Longmire-----	15	Very limited Slope	1.00	Very limited Slope	1.00
8120: Longmire-----	35	Very limited Slope	1.00	Very limited Slope	1.00
Laughingwater-----	30	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Vantrump-----	20	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
8125: Vantrump-----	35	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Laughingwater-----	25	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Longmire-----	20	Very limited Slope	1.00	Very limited Slope	1.00
8130: Summerland-----	70	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8130: Longmire-----	15	Very limited Slope	1.00	Very limited Slope	1.00
8150: Ghost, warm-----	45	Very limited Depth to saturated zone Ponding Organic matter content	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content	1.00 1.00 1.00
Frogheaven-----	30	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
8200: Riverwash-----	80	Not rated		Not rated	
Flett, cold-----	15	Very limited Flooding Slope Large stones content	1.00 1.00 0.23	Very limited Slope Large stones content	1.00 0.23
8201: Mysticlake-----	50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Unicornpeak-----	25	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
8203: Glacierisland-----	55	Very limited Slope Gravel content	1.00 0.92	Very limited Slope Gravel content	1.00 0.92
Sheepskull-----	20	Very limited Slope Gravel content	1.00 1.00	Very limited Slope Gravel content	1.00 1.00
Sluiskin-----	15	Very limited Slope Depth to bedrock Gravel content	1.00 1.00 0.95	Very limited Slope Depth to bedrock Gravel content	1.00 1.00 0.95
8210: Mysticlake-----	45	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8210: Unicornpeak-----	30	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Tipsoo-----	15	Very limited Slope	1.00	Very limited Slope	1.00
8211: Owyhigh-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Mysticlake-----	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
8220: Tipsoo-----	35	Very limited Slope	1.00	Very limited Slope	1.00
Unicornpeak-----	30	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Mysticlake-----	20	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
8225: Mysticlake-----	35	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Unicornpeak-----	25	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Tipsoo-----	20	Very limited Slope	1.00	Very limited Slope	1.00
8230: Summerland, cold----	70	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04
Tipsoo-----	15	Very limited Slope	1.00	Very limited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8250: Ghost-----	35	Very limited Depth to saturated zone Ponding Organic matter content	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content	1.00 1.00 1.00
Williwakas-----	30	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Mountwow, moist-----	20	Very limited Depth to saturated zone Slope	1.00 0.16	Very limited Depth to saturated zone Slope	1.00 0.16
8251: Mountwow, moist-----	50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Williwakas-----	25	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Unicornpeak-----	15	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
8252: Mountwow, moist-----	45	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Unicornpeak-----	20	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
8255: Ghost-----	35	Very limited Depth to saturated zone Ponding Organic matter content	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8255: Williwakas-----	30	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Mountwow-----	20	Very limited Depth to saturated zone Slope	1.00 0.16	Very limited Depth to saturated zone Slope	1.00 0.16
8256: Mountwow-----	50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Williwakas-----	20	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
Unicornpeak-----	15	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
8257: Wahpenayo-----	40	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Mountwow-----	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00
9100: Arahustan-----	50	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Ohanapecosh-----	25	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13
Longmire-----	15	Very limited Slope	1.00	Very limited Slope	1.00
9101: Ohanapecosh-----	50	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9101: Arahustan-----	25	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Summerland-----	15	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04
9110: Longmire-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Arahustan-----	35	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
9120: Longmire-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Arahustan-----	25	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Vantrump-----	20	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
9125: Longmire-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Arahustan-----	25	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Ohanapecosh-----	15	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13
9200: Owyhigh-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Ipsut-----	25	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13
Tipsoo-----	15	Very limited Slope	1.00	Very limited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9201: Sluiskin-----	40	Very limited Slope Depth to bedrock Gravel content	1.00 1.00 0.95	Very limited Slope Depth to bedrock Gravel content	1.00 1.00 0.95
Owyhigh-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Summerland, cold---	15	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04	Very limited Slope Gravel content Large stones content	1.00 0.98 0.04
9210: Tipsoo-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Owyhigh-----	35	Very limited Slope	1.00	Very limited Slope	1.00
9220: Tipsoo-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Owyhigh-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Mysticlake-----	20	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
9225: Owyhigh-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Tipsoo-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Ipsut-----	15	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13	Very limited Slope Depth to bedrock Too sandy	1.00 1.00 0.13
9250: Burroughs, moist----	45	Very limited Slope	1.00	Very limited Slope	1.00
Littletahoma, moist	20	Very limited Slope	1.00	Very limited Slope	1.00
Tatoosh, moist-----	20	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00
9251: Sarvant, moist-----	45	Very limited Slope Gravel content	1.00 0.38	Very limited Slope Gravel content	1.00 0.38

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9251:					
Chenuis, moist-----	25	Very limited Slope Gravel content	1.00 0.02	Very limited Slope Gravel content	1.00 0.02
Tatoosh, moist-----	20	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00
9252:					
Littletahoma, moist	40	Very limited Slope	1.00	Very limited Slope	1.00
Burroughs, moist-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Mountwow, moist-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
9253:					
Mountwow, moist-----	40	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Littletahoma, moist	30	Very limited Slope	1.00	Very limited Slope	1.00
Unicornpeak-----	15	Very limited Slope Depth to saturated zone	1.00 0.91	Very limited Slope Depth to saturated zone	1.00 0.60
9254:					
Chenuis, moist-----	40	Very limited Slope Gravel content	1.00 0.02	Very limited Slope Gravel content	1.00 0.02
Sarvant, moist-----	25	Very limited Slope Gravel content	1.00 0.38	Very limited Slope Gravel content	1.00 0.38
Mountwow, moist-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
9255:					
Burroughs-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Littletahoma-----	20	Very limited Slope	1.00	Very limited Slope	1.00
Tatoosh-----	15	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9256: Chenuis-----	50	Very limited Slope Gravel content	1.00 0.02	Very limited Slope Gravel content	1.00 0.02
Sarvant-----	30	Very limited Slope Gravel content	1.00 0.38	Very limited Slope Gravel content	1.00 0.38
9257: Littletahoma-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Burroughs-----	20	Very limited Slope	1.00	Very limited Slope	1.00
Mountwow-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
9258: Mountwow-----	35	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
Littletahoma-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Wahpenayo-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
9259: Chenuis-----	40	Very limited Slope Gravel content	1.00 0.02	Very limited Slope Gravel content	1.00 0.02
Sarvant-----	25	Very limited Slope Gravel content	1.00 0.38	Very limited Slope Gravel content	1.00 0.38
Mountwow-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
9260: Mountwow, alpine----	45	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Chenuis, alpine----	20	Very limited Slope Gravel content	1.00 0.02	Very limited Slope Gravel content	1.00 0.02

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9260: Meany-----	15	Very limited Depth to saturated zone Flooding Slope Gravel content Large stones content	1.00 1.00 1.00 0.95 0.04	Very limited Depth to saturated zone Slope Gravel content Large stones content	1.00 1.00 0.95 0.04
9261: Wahpenayo, alpine---	45	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
Burroughs, alpine---	20	Very limited Slope	1.00	Very limited Slope	1.00
Mountwow, alpine----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
9262: Sarvant, alpine-----	40	Very limited Slope Gravel content	1.00 0.38	Very limited Slope Gravel content	1.00 0.38
Wahpenayo, alpine---	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
Mountwow, alpine----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
9263: Tamanos-----	80	Very limited Permafrost Slope Too sandy Gravel content	1.00 1.00 0.50 0.19	Very limited Permafrost Slope Too sandy Gravel content	1.00 1.00 0.50 0.19
Glaciers-----	20	Not rated		Not rated	
9993: Rubbleland, talus---	50	Not rated		Not rated	
Rock outcrop-----	35	Not rated		Not rated	
9994: Rubbleland, till----	50	Not rated		Not rated	
Glacierisland-----	25	Very limited Slope Gravel content	1.00 0.92	Very limited Slope Gravel content	1.00 0.92

Soil Survey of Mount Rainier National Park, Washington

Table 17.--Camp and Picnic Areas--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9994: Wonderland-----	15	Very limited Depth to saturated zone Slope Gravel content Large stones content	1.00 1.00 0.63 0.01	Very limited Slope Depth to saturated zone Gravel content Large stones content	1.00 1.00 0.63 0.01
9996: Glaciers-----	45	Not rated		Not rated	
Rock outcrop-----	45	Not rated		Not rated	
W: Water-----	100	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

**Table 18.--Trail Management**

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6100: Riverwash-----	80	Not rated		Not rated	
Comet-----	15	Not limited		Not limited	
6101: Comet-----	50	Not limited		Not limited	
Carbon-----	35	Somewhat limited Depth to saturated zone	0.06	Somewhat limited Depth to saturated zone	0.06
6110: Tokaloo-----	55	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Kautz-----	25	Not limited		Not limited	
Sunbeam-----	20	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
6120: Kautz-----	45	Somewhat limited Slope	0.50	Not limited	
Tokaloo-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Sunbeam-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
6125: Tokaloo-----	35	Very limited Depth to saturated zone Slope	1.00 0.50	Very limited Depth to saturated zone	1.00
Kautz-----	30	Very limited Slope	1.00	Somewhat limited Slope	0.78
Goldenlakes-----	20	Very limited Slope	1.00	Somewhat limited Slope	0.78
7100: Goldenlakes-----	50	Very limited Slope	1.00	Very limited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
7100: Ingraham-----	30	Very limited Slope Water erosion	1.00 1.00	Very limited Water erosion Slope	1.00 1.00
Kautz-----	15	Very limited Slope	1.00	Very limited Slope	1.00
7110: Kautz-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Goldenlakes-----	35	Very limited Slope	1.00	Very limited Slope	1.00
7120: Kautz-----	50	Very limited Slope	1.00	Somewhat limited Slope	0.78
Tokaloo-----	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78
Goldenlakes-----	15	Very limited Slope	1.00	Somewhat limited Slope	0.78
7125: Goldenlakes-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Kautz-----	30	Very limited Slope	1.00	Very limited Slope	1.00
Ingraham-----	15	Very limited Water erosion Slope	1.00 1.00	Very limited Water erosion Slope	1.00 1.00
8100: Riverwash-----	60	Not rated		Not rated	
Flett-----	25	Somewhat limited Large stones content	0.23	Somewhat limited Large stones content	0.23
8101: Flett-----	50	Somewhat limited Large stones content	0.23	Somewhat limited Large stones content	0.23
Narada-----	35	Very limited Water erosion	1.00	Very limited Water erosion	1.00
8110: Vantrump-----	40	Very limited Depth to saturated zone Slope	1.00 0.50	Very limited Depth to saturated zone	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8110: Laughingwater-----	30	Somewhat limited Slope Depth to saturated zone	0.50 0.22	Somewhat limited Depth to saturated zone	0.22
Longmire-----	15	Somewhat limited Slope	0.50	Not limited	
8120: Longmire-----	35	Very limited Slope	1.00	Somewhat limited Slope	0.22
Laughingwater-----	30	Very limited Slope Depth to saturated zone	1.00 0.22	Somewhat limited Depth to saturated zone	0.22
Vantrump-----	20	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
8125: Vantrump-----	35	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78
Laughingwater-----	25	Very limited Slope Depth to saturated zone	1.00 0.22	Somewhat limited Slope Depth to saturated zone	0.78 0.22
Longmire-----	20	Very limited Slope	1.00	Somewhat limited Slope	0.78
8130: Summerland-----	70	Very limited Slope Large stones content	1.00 0.04	Very limited Slope Large stones content	1.00 0.04
Longmire-----	15	Very limited Slope	1.00	Very limited Slope	1.00
8150: Ghost, warm-----	45	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00
Frogheaven-----	30	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8200: Riverwash-----	80	Not rated		Not rated	
Flett, cold-----	15	Somewhat limited Slope Large stones content	0.50 0.23	Somewhat limited Large stones content	0.23
8201: Mysticlake-----	50	Very limited Depth to saturated zone Slope	1.00 0.50	Very limited Depth to saturated zone	1.00
Unicornpeak-----	25	Somewhat limited Slope Depth to saturated zone	0.50 0.22	Somewhat limited Depth to saturated zone	0.22
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00
8203: Glacierisland-----	55	Very limited Slope	1.00	Very limited Slope	1.00
Sheepskull-----	20	Very limited Slope	1.00	Very limited Slope	1.00
Sluiskin-----	15	Very limited Slope	1.00	Very limited Slope	1.00
8210: Mysticlake-----	45	Very limited Depth to saturated zone Slope	1.00 0.50	Very limited Depth to saturated zone	1.00
Unicornpeak-----	30	Somewhat limited Slope Depth to saturated zone	0.50 0.22	Somewhat limited Depth to saturated zone	0.22
Tipsoo-----	15	Somewhat limited Slope	0.50	Not limited	
8211: Owyhigh-----	50	Very limited Slope	1.00	Somewhat limited Slope	0.22
Mysticlake-----	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	0.22
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8220: Tipsoo-----	35	Very limited Slope	1.00	Somewhat limited Slope	0.78
Unicornpeak-----	30	Very limited Slope Depth to saturated zone	1.00 0.22	Somewhat limited Slope Depth to saturated zone	0.78 0.22
Mysticlake-----	20	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78
8225: Mysticlake-----	35	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.22
Unicornpeak-----	25	Very limited Slope Depth to saturated zone	1.00 0.22	Somewhat limited Slope Depth to saturated zone	0.22 0.22
Tipsoo-----	20	Very limited Slope	1.00	Somewhat limited Slope	0.22
8230: Summerland, cold----	70	Very limited Slope Large stones content	1.00 0.04	Very limited Slope Large stones content	1.00 0.04
Tipsoo-----	15	Very limited Slope	1.00	Very limited Slope	1.00
8250: Ghost-----	35	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00
Williwakas-----	30	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
Mountwow, moist-----	20	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
8251: Mountwow, moist-----	50	Very limited Depth to saturated zone Slope	1.00 0.50	Very limited Depth to saturated zone	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8251: Williwakas-----	25	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
Unicornpeak-----	15	Somewhat limited Slope Depth to saturated zone	0.50 0.22	Somewhat limited Depth to saturated zone	0.22
8252: Mountwow, moist-----	45	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.22
Unicornpeak-----	20	Very limited Slope Depth to saturated zone	1.00 0.22	Somewhat limited Slope Depth to saturated zone	0.22 0.22
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
8255: Ghost-----	35	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00
Williwakas-----	30	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
Mountwow-----	20	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
8256: Mountwow-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Williwakas-----	20	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
Unicornpeak-----	15	Somewhat limited Depth to saturated zone	0.22	Somewhat limited Depth to saturated zone	0.22

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8257: Wahpenayo-----	40	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.22
Mountwow-----	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.22
Williwakas-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
9100: Arahustan-----	50	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Ohanapecosh-----	25	Very limited Water erosion Slope Too sandy	1.00 1.00 0.13	Very limited Water erosion Slope Too sandy	1.00 1.00 0.13
Longmire-----	15	Very limited Slope	1.00	Very limited Slope	1.00
9101: Ohanapecosh-----	50	Very limited Water erosion Slope Too sandy	1.00 1.00 0.13	Very limited Water erosion Slope Too sandy	1.00 1.00 0.13
Arahustan-----	25	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Summerland-----	15	Very limited Slope Large stones content	1.00 0.04	Very limited Slope Large stones content	1.00 0.04
9110: Longmire-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Arahustan-----	35	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
9120: Longmire-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Arahustan-----	25	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9120: Vantrump-----	20	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone	1.00
9125: Longmire-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Arahustan-----	25	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Chanapecosh-----	15	Very limited Water erosion Slope Too sandy	1.00 1.00 0.13	Very limited Water erosion Slope Too sandy	1.00 1.00 0.13
9200: Owyhigh-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Ipsut-----	25	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
Tipsoo-----	15	Very limited Slope	1.00	Very limited Slope	1.00
9201: Sluiskin-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Owyhigh-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Summerland, cold----	15	Very limited Slope Large stones content	1.00 0.04	Very limited Slope Large stones content	1.00 0.04
9210: Tipsoo-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Owyhigh-----	35	Very limited Slope	1.00	Very limited Slope	1.00
9220: Tipsoo-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Owyhigh-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Mysticlake-----	20	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9225: Owyhigh-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Tipsoo-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Ipsut-----	15	Very limited Slope Too sandy	1.00 0.13	Very limited Slope Too sandy	1.00 0.13
9250: Burroughs, moist----	45	Very limited Slope	1.00	Very limited Slope	1.00
Littletahoma, moist	20	Very limited Slope	1.00	Very limited Slope	1.00
Tatoosh, moist-----	20	Very limited Slope	1.00	Very limited Slope	1.00
9251: Sarvant, moist-----	45	Very limited Slope	1.00	Very limited Slope	1.00
Chenuis, moist-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Tatoosh, moist-----	20	Very limited Slope	1.00	Very limited Slope	1.00
9252: Littletahoma, moist	40	Very limited Slope	1.00	Very limited Slope	1.00
Burroughs, moist----	25	Very limited Slope	1.00	Very limited Slope	1.00
Mountwow, moist-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78
9253: Mountwow, moist-----	40	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone	1.00
Littletahoma, moist	30	Very limited Slope	1.00	Somewhat limited Slope	0.78
Unicornpeak-----	15	Very limited Slope Depth to saturated zone	1.00 0.22	Somewhat limited Slope Depth to saturated zone	0.78 0.22

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9254:					
Chenuis, moist-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Sarvant, moist-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Mountwow, moist-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone	1.00
9255:					
Burroughs-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Littletahoma-----	20	Very limited Slope	1.00	Very limited Slope	1.00
Tatoosh-----	15	Very limited Slope	1.00	Very limited Slope	1.00
9256:					
Chenuis-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Sarvant-----	30	Very limited Slope	1.00	Very limited Slope	1.00
9257:					
Littletahoma-----	50	Very limited Slope	1.00	Very limited Slope	1.00
Burroughs-----	20	Very limited Slope	1.00	Very limited Slope	1.00
Mountwow-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78
9258:					
Mountwow-----	35	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone	1.00
Littletahoma-----	25	Very limited Slope	1.00	Somewhat limited Slope	0.78
Wahpenayo-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone	1.00
9259:					
Chenuis-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Sarvant-----	25	Very limited Slope	1.00	Very limited Slope	1.00

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9259: Mountwow-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone	1.00
9260: Mountwow, alpine----	45	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone	1.00
Chenuis, alpine-----	20	Very limited Slope	1.00	Somewhat limited Slope	0.78
Meany-----	15	Very limited Depth to saturated zone Large stones content	1.00 0.04	Very limited Depth to saturated zone Large stones content	1.00 0.04
9261: Wahpenayo, alpine---	45	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.22
Burroughs, alpine---	20	Very limited Slope Water erosion	1.00 1.00	Very limited Water erosion Slope	1.00 0.78
Mountwow, alpine-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.22
9262: Sarvant, alpine-----	40	Very limited Slope	1.00	Very limited Slope	1.00
Wahpenayo, alpine---	25	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78
Mountwow, alpine-----	15	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.78
9263: Tamanos-----	80	Very limited Permafrost Slope Too sandy	1.00 1.00 0.50	Very limited Permafrost Slope Too sandy	1.00 0.78 0.50
Glaciers-----	20	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

Table 18.--Trail Management--Continued

Map symbol and soil name	Pct. of map unit	Foot traffic and equestrian trails		Mountain bike and off-road vehicle trails	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9993: Rubbleland, talus---	50	Not rated		Not rated	
Rock outcrop-----	35	Not rated		Not rated	
9994: Rubbleland, till----	50	Not rated		Not rated	
Glacierisland-----	25	Very limited Slope	1.00	Very limited Slope	1.00
Wonderland-----	15	Very limited Depth to saturated zone Slope Large stones content	1.00 1.00 0.01	Very limited Depth to saturated zone Large stones content	1.00 0.01
9996: Glaciers-----	45	Not rated		Not rated	
Rock outcrop-----	45	Not rated		Not rated	
W: Water-----	100	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

**Table 19.--Sewage Disposal**

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map  unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6100: Riverwash-----	80	Not rated		Not rated	
Comet-----	15	Very limited Seepage, bottom layer Flooding	1.00 0.40	Very limited Seepage Slope Flooding	1.00 0.68 0.40
Water-----	5	Not rated		Not rated	
6101: Comet-----	50	Very limited Seepage, bottom layer Flooding Slope	1.00 0.40 0.16	Very limited Seepage Slope Flooding	1.00 1.00 0.40
Carbon-----	35	Very limited Depth to saturated zone Seepage, bottom layer Flooding	1.00 1.00 0.40	Very limited Seepage Depth to saturated zone Slope Flooding	1.00 1.00 0.68 0.40
Sunbeam-----	10	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.08
Riverwash-----	5	Not rated		Not rated	
6110: Tokaloo-----	55	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Kautz-----	25	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6110: Sunbeam-----	20	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.68
6120: Kautz-----	45	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00
Tokaloo-----	35	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Sunbeam-----	15	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Goldenlakes-----	5	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 1.00 1.00
6125: Tokaloo-----	35	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Kautz-----	30	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00 1.00
Goldenlakes-----	20	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6125: Sunbeam-----	10	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Ingraham-----	5	Very limited Depth to bedrock Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope	1.00 1.00
7100: Goldenlakes-----	50	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Ingraham-----	30	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope	1.00 1.00
Kautz-----	15	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
7110: Kautz-----	40	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Goldenlakes-----	35	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Tokaloo-----	10	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
7110: Ingraham-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope	1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
Sunbeam-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
7120: Kautz-----	50	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Tokaloo-----	25	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Goldenlakes-----	15	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Ingraham-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope	1.00 1.00
Sunbeam-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
7125: Goldenlakes-----	40	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
7125: Kautz-----	30	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Ingraham-----	15	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope	1.00 1.00
Tokaloo-----	10	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Sunbeam-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
8100: Riverwash-----	60	Not rated		Not rated	
Flett-----	25	Very limited Filtering capacity Seepage, bottom layer Slope Large stones Flooding	1.00 1.00 1.00 1.00 0.63 0.40	Very limited Seepage Slope Large stones Flooding	1.00 1.00 1.00 0.40
Narada-----	10	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Flooding	1.00 1.00 1.00 1.00 0.40	Very limited Seepage Depth to saturated zone Slope Flooding	1.00 1.00 0.68 0.40
Water-----	5	Not rated		Not rated	
8101: Flett-----	50	Very limited Filtering capacity Seepage, bottom layer Slope Large stones Flooding	1.00 1.00 1.00 1.00 0.63 0.40	Very limited Seepage Slope Large stones Flooding	1.00 1.00 1.00 0.40

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8101: Narada-----	35	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope Flooding	1.00 1.00 1.00 1.00 1.00 1.00 0.40	Very limited Seepage Depth to saturated zone Slope Flooding	1.00 1.00 1.00 0.40
Frogheaven-----	10	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Riverwash-----	5	Not rated		Not rated	
8110: Vantrump-----	40	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Laughingwater-----	30	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Longmire-----	15	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00
Frogheaven-----	10	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Ghost, warm-----	5	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8120: Longmire-----	35	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00
Laughingwater-----	30	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Vantrump-----	20	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Frogheaven-----	10	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Arahustan-----	5	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 1.00
8125: Vantrump-----	35	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Laughingwater-----	25	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Longmire-----	20	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8125: Arahustan-----	10	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Frogheaven-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Ohanapecosh-----	5	Very limited Depth to bedrock Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
8130: Summerland-----	70	Very limited Filtering capacity Slope Seepage, bottom layer Large stones	1.00 1.00 1.00 0.12	Very limited Slope Seepage Large stones	1.00 1.00 0.84
Longmire-----	15	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Vantrump-----	10	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Frogheaven-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
8150: Ghost, warm-----	45	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8150: Frogheaven-----	30	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Laughingwater-----	10	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Vantrump-----	10	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Water-----	5	Not rated		Not rated	
8200: Riverwash-----	80	Not rated		Not rated	
Flett, cold-----	15	Very limited Filtering capacity Seepage, bottom layer Slope Large stones Flooding	1.00 1.00 1.00 1.00 0.63 0.40	Very limited Seepage Slope Large stones Flooding	1.00 1.00 1.00 1.00 0.40
Water-----	5	Not rated		Not rated	
8201: Mysticlake-----	50	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Unicornpeak-----	25	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Williwakas-----	15	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.68

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8201: Ghost-----	5	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Owyhigh-----	5	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 1.00
8203: Glacierisland-----	55	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Sheepskull-----	20	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage Large stones	1.00 1.00 1.00 1.00 0.06
Sluiskin-----	15	Very limited Depth to bedrock Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Wonderland-----	10	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope Large stones	1.00 1.00 1.00 1.00 0.07
8210: Mysticlake-----	45	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Unicornpeak-----	30	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8210: Tipsoo-----	15	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00
Ghost-----	10	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
8211: Owyhigh-----	50	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Mysticlake-----	25	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Williwakas-----	15	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Ipsut-----	5	Very limited Depth to bedrock Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Mountwow-----	5	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
8220: Tipsoo-----	35	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8220: Unicornpeak-----	30	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Mysticlake-----	20	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Williwakas-----	10	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Owyhigh-----	5	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
8225: Mysticlake-----	35	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Unicornpeak-----	25	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Tipsoo-----	20	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Owyhigh-----	10	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8225: Ipsut-----	5	Very limited Depth to bedrock Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.68
8230: Summerland, cold----	70	Very limited Filtering capacity Slope Seepage, bottom layer Large stones	1.00 1.00 1.00 0.12	Very limited Slope Seepage Large stones	1.00 1.00 0.84
Tipsoo-----	15	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Wonderland-----	10	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope Large stones	1.00 1.00 1.00 1.00 0.07
Glacierisland-----	5	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
8250: Ghost-----	35	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
Williwakas-----	30	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.68

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8250: Mountwow, moist-----	20	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Unicornpeak-----	10	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope	1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Water-----	5	Not rated		Not rated	
8251: Mountwow, moist-----	50	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Williwakas-----	25	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Unicornpeak-----	15	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Ghost-----	10	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
8252: Mountwow, moist-----	45	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8252: Unicornpeak-----	20	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Williwakas-----	15	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Owyhigh-----	10	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 1.00
Rock outcrop-----	10	Not rated		Not rated	
8255: Ghost-----	35	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Williwakas-----	30	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Mountwow-----	20	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Unicornpeak-----	10	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Water-----	5	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8256: Mountwow-----	50	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Williwakas-----	20	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Unicornpeak-----	15	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Wahpenayo-----	10	Very limited Depth to bedrock Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Ghost-----	5	Very limited Ponding Depth to saturated zone Seepage, bottom layer Subsidence	1.00 1.00 1.00 1.00	Very limited Ponding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
8257: Wahpenayo-----	40	Very limited Depth to bedrock Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Mountwow-----	25	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
8257: Williwakas-----	15	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.68
Owyhigh-----	10	Very limited Depth to bedrock Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Unicornpeak-----	10	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
9100: Arahustan-----	50	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Ohanapecosh-----	25	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Longmire-----	15	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
Vantrump-----	5	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
9101: Ohanapecosh-----	50	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9101: Arahustan-----	25	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Summerland-----	15	Very limited Filtering capacity Slope Seepage, bottom layer Large stones	1.00 1.00 1.00 0.12	Very limited Slope Seepage Large stones	1.00 1.00 0.84
Rock outcrop-----	5	Not rated		Not rated	
Rubbleland, talus---	5	Not rated		Not rated	
9110: Longmire-----	45	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Arahustan-----	35	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Frogheaven-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.68
Chanapecosh-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
Vantrump-----	5	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9120: Longmire-----	45	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Arahustan-----	25	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Vantrump-----	20	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Frogheaven-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
Ohanapecosh-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
9125: Longmire-----	40	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Arahustan-----	25	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Ohanapecosh-----	15	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Vantrump-----	10	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 0.16	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9125: Frogheaven-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.08
Laughingwater-----	5	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
9200: Owyhigh-----	50	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Ipsut-----	25	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Tipsoo-----	15	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
Unicornpeak-----	5	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
9201: Sluiskin-----	40	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Owyhigh-----	25	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9201: Summerland, cold----	15	Very limited Filtering capacity Slope Seepage, bottom layer Large stones	1.00 1.00 1.00 0.12	Very limited Slope Seepage Large stones	1.00 1.00 0.84
Rock outcrop-----	10	Not rated		Not rated	
Rubbleland, talus---	10	Not rated		Not rated	
9210: Tipsoo-----	45	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Owyhigh-----	35	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Ipsut-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Mysticlake-----	5	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
9220: Tipsoo-----	45	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9220: Owyhigh-----	25	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Mysticlake-----	20	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Ipsut-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
9225: Owyhigh-----	40	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Tipsoo-----	25	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Ipsut-----	15	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Mysticlake-----	10	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9225: Unicornpeak-----	5	Very limited Depth to saturated zone Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
9250: Burroughs, moist----	45	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Littletahoma, moist	20	Very limited Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Tatoosh, moist-----	20	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Mountwow, moist-----	10	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
9251: Sarvant, moist-----	45	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Chenuis, moist-----	25	Very limited Slope Filtering capacity Seepage, bottom layer Large stones	1.00 1.00 1.00 0.63	Very limited Slope Seepage Large stones	1.00 1.00 0.80

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9251: Tatoosh, moist-----	20	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
Rubbleland, talus---	5	Not rated		Not rated	
9252: Littletahoma, moist	40	Very limited Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Burroughs, moist----	25	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Mountwow, moist-----	15	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Tatoosh, moist-----	10	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
Unicornpeak-----	5	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
9253: Mountwow, moist-----	40	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Littletahoma, moist	30	Very limited Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9253: Unicornpeak-----	15	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Burroughs, moist----	10	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
9254: Chenuis, moist-----	40	Very limited Slope Filtering capacity Seepage, bottom layer Large stones	1.00 1.00 1.00 0.63	Very limited Slope Seepage Large stones	1.00 1.00 0.80
Sarvant, moist-----	25	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Mountwow, moist-----	15	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Unicornpeak-----	10	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Tatoosh, moist-----	5	Very limited Depth to bedrock Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9254: Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
9255: Burroughs-----	50	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Littletahoma-----	20	Very limited Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Tatoosh-----	15	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Mountwow-----	10	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
9256: Chenuis-----	50	Very limited Slope Filtering capacity Seepage, bottom layer Large stones	1.00 1.00 1.00 1.00 0.63	Very limited Slope Seepage Large stones	1.00 1.00 0.80
Sarvant-----	30	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Tatoosh-----	10	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9256: Rubbleland, talus---	5	Not rated		Not rated	
9257: Littletahoma-----	50	Very limited Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Burroughs-----	20	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Mountwow-----	15	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Tatoosh-----	10	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Rock outcrop-----	5	Not rated		Not rated	
9258: Mountwow-----	35	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Littletahoma-----	25	Very limited Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Wahpenayo-----	15	Very limited Depth to bedrock Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Burroughs-----	10	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9258: Unicornpeak-----	10	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 0.68
9259: Chenuis-----	40	Very limited Slope Filtering capacity Seepage, bottom layer Large stones	1.00 1.00 1.00 0.63	Very limited Slope Seepage Large stones	1.00 1.00 0.80
Sarvant-----	25	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Mountwow-----	15	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Unicornpeak-----	10	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00
Tatoosh-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Williwakas-----	5	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00 0.68

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9260: Mountwow, alpine----	45	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00
Chenuis, alpine-----	20	Very limited Filtering capacity Slope Seepage, bottom layer Large stones	1.00 1.00 1.00 0.63	Very limited Slope Seepage Large stones	1.00 1.00 0.80
Meany-----	15	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope Flooding	1.00 1.00 1.00 1.00 0.40	Very limited Seepage Depth to saturated zone Slope Large stones Flooding	1.00 1.00 1.00 0.48 0.40
Riverwash-----	10	Not rated		Not rated	
Wahpenayo, alpine---	10	Very limited Depth to bedrock Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
9261: Wahpenayo, alpine---	45	Very limited Depth to bedrock Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00
Burroughs, alpine---	20	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 1.00 1.00
Mountwow, alpine----	15	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9261: Chenuis, alpine-----	10	Very limited Filtering capacity Slope Seepage, bottom layer Large stones	1.00 1.00 1.00 0.63	Very limited Slope Seepage Large stones	1.00 1.00 0.80
Meany-----	10	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Slope Flooding	1.00 1.00 1.00 1.00 0.40	Very limited Seepage Depth to saturated zone Slope Large stones Flooding	1.00 1.00 1.00 0.48 0.40
9262: Sarvant, alpine-----	40	Very limited Depth to bedrock Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00 1.00
Wahpenayo, alpine---	25	Very limited Depth to bedrock Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Mountwow, alpine-----	15	Very limited Depth to saturated zone Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Chenuis, alpine-----	10	Very limited Slope Filtering capacity Seepage, bottom layer Large stones	1.00 1.00 1.00 0.63	Very limited Slope Seepage Large stones	1.00 1.00 0.80
Rock outcrop-----	5	Not rated		Not rated	
Tatoosh, alpine-----	5	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
9263: Tamanos-----	80	Very limited Permafrost Slope	1.00 1.00	Very limited Permafrost Slope Seepage	1.00 1.00 1.00

Soil Survey of Mount Rainier National Park, Washington

Table 19.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
9263: Glaciers-----	20	Not rated		Not rated	
9993: Rubbleland, talus---	50	Not rated		Not rated	
Rock outcrop-----	35	Not rated		Not rated	
Sluiskin-----	10	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Summerland, cold----	5	Very limited Filtering capacity Slope Seepage, bottom layer Large stones	1.00 1.00 1.00 0.12	Very limited Slope Seepage Large stones	1.00 1.00 0.84
9994: Rubbleland, till----	50	Not rated		Not rated	
Glacierisland-----	25	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Wonderland-----	15	Very limited Depth to saturated zone Slope Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Slope Seepage Depth to saturated zone Large stones	1.00 1.00 1.00 0.07
Sheepskull-----	10	Very limited Depth to bedrock Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage Large stones	1.00 1.00 1.00 0.06
9996: Glaciers-----	45	Not rated		Not rated	
Rock outcrop-----	45	Not rated		Not rated	
Tatoosh, volcanic cone-----	10	Very limited Depth to bedrock Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
W: Water-----	100	Not rated		Not rated	

Soil Survey of Mount Rainier National Park, Washington

**Table 20.--Laboratory-Sampled Pedon Information**

Soil name	Pedon type	User site identification	User pedon identification	Laboratory source*	Laboratory pedon number
Arahustan-----	Taxadjunct to series	S2011WA041508	S2011WA041508	SSL	13N0616
Burroughs-----	Taxadjunct to series	S2011WA053510	S2011WA053510	SSL	13N0628
Burroughs-----	Taxadjunct to series	S2012WA041502	S2012WA041502	SSL	13N0618
Burroughs-----	Taxadjunct to series	S2012WA053503	S2012WA053503	SSL	13N0632
Chenuis-----	Correlates to named soil	S2012WA041501	S2012WA041501	SSL	13N0617
Flett-----	Taxadjunct to series	S2011WA053505	S2011WA053505	SSL	13N0623
Fragmental, glassy Typic Vitricryands	Undefined observation	S2012WA053502	S2012WA053502	SSL	13N0631
Ghost-----	Taxadjunct to series	S2011WA053508	S2011WA053508	SSL	13N0626
Glassy Lithic Cryopsammments-----	Undefined observation	S2012WA053506	S2012WA053506	SSL	13N0635
Kautz-----	Taxadjunct to series	S2011WA041502	S2011WA041502	SSL	13N0611
Littletahoma-----	Taxadjunct to series	S2011WA053509	S2011WA053509	SSL	13N0627
Littletahoma-----	Correlates to named soil	S2012WA053587	S2012WA053587	SSL	13N0642
Longmire-----	Taxadjunct to series	S2011WA053502	S2011WA053502	SSL	13N0620
Longmire-----	Taxadjunct to series	S2011WA053504	S2011WA053504	SSL	13N0622
Longmire-----	Correlates to named soil	S2011WA053506	S2011WA053506	SSL	13N0624
Longmire-----	Taxadjunct to series	S2012WA041547	S2012WA041547	SSL	13N0637
Longmire-----	Taxadjunct to series	S2012WA053501	S2012WA053501	SSL	13N0630
Longmire-----	Correlates to named soil	S2012WA053581	S2012WA053581	SSL	13N0636
Longmire-----	Correlates to named soil	S2012WA053586	S2012WA053586	SSL	13N0641
Mountwow-----	Taxadjunct to series	S2011WA041505	S2011WA041505	SSL	13N0614

Soil Survey of Mount Rainier National Park, Washington

Table 20.--Laboratory-Sampled Pedon Information--Continued

Soil name	Pedon type	User site identification	User pedon identification	Laboratory source*	Laboratory pedon number
Mysticlake-----	Correlates to named soil	S2011WA041504	S2011WA041504	SSL	13N0613
Narada-----	Taxadjunct to series	S2012WA053583	S2012WA053583	SSL	13N0638
Narada-----	Taxadjunct to series	S2012WA053584	S2012WA053584	SSL	13N0639
Owyhigh-----	Correlates to named soil	S2011WA041506	S2011WA041506	SSL	13N0615
Owyhigh-----	Taxadjunct to series	S2011WA053501	S2011WA053501	SSL	13N0367
Summerland-----	Taxadjunct to series	S2011WA053503	S2011WA053503	SSL	13N0621
Summerland-----	Taxadjunct to series	S2012WA053589	S2012WA053589	SSL	13N0644
Tamanos-----	Official series description	S2012WA053585	S2012WA053585	SSL	13N0640
Tamanos-----	Correlates to named soil	S2012WA053588	S2012WA053588	SSL	13N0643
Tatoosh-----	Taxadjunct to series	S2012WA041503	S2012WA041503	SSL	13N0619
Tatoosh-----	Taxadjunct to series	S2012WA053504	S2012WA053504	SSL	13N0633
Tatoosh-----	Taxadjunct to series	S2012WA053505	S2012WA053505	SSL	13N0634
Tipsoo-----	Taxadjunct to series	S2011WA041503	S2011WA041503	SSL	13N0612
Unicornpeak-----	Taxadjunct to series	S2011WA041501	S2011WA041501	SSL	13N0365
Unicornpeak-----	Taxadjunct to series	S2011WA053514	S2011WA053514	SSL	13N0629
Vantrump-----	Taxadjunct to series	S2011WA053507	S2011WA053507	SSL	13N0625

\*SSL is the Kellogg Soil Survey Laboratory at the National Soil Survey Center in Lincoln, Nebraska.

Table 21.--Engineering Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
6100: Riverwash-----	cm										Pct	
	0-150	Stratified gravel to sand										
Comet-----	0-2	Slightly decomposed plant material	PT	A-8			0	0				
	2-4	Moderately decomposed plant material	PT	A-8			0	0				
	4-28	Extremely gravelly ashy loamy sand, very cobbly ashy loamy coarse sand, very gravelly ashy sandy loam	GP-GM, GM	A-1	0-10	0-25	25-50	25-50	15-40	10-20	20-35	NP-5
	28-46	Very gravelly ashy loamy sand, extremely cobbly ashy sandy loam, very stony ashy sand	GC-GM, GP-GM	A-1	0-30	0-25	25-50	25-50	20-40	5-20	0-25	NP-5
	46-71	Gravelly ashy loamy sand, very cobbly ashy sand, cobbly ashy sandy loam	GM, SC-SM, GW-GM	A-2, A-1	0-40	0-35	35-75	30-70	25-60	10-25	0-25	NP-5
	71-93	Very gravelly ashy loamy sand, extremely gravelly ashy sand, very cobbly ashy sandy loam	GC-GM, GP-GM, GM	A-1	0-50	0-40	25-55	25-50	20-45	10-20	0-25	NP-5
	93-105	Very gravelly ashy fine sandy loam, extremely gravelly ashy sand, very stony ashy loamy sand	GP-GM, GM	A-1	0-50	10-40	25-55	25-55	20-50	10-25	0-30	NP-5
	105-150	Extremely cobbly ashy fine sandy loam, very gravelly ashy sand, extremely gravelly ashy loamy sand	GP-GM, GM	A-1	0-50	10-35	25-55	25-50	20-45	10-25	0-30	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
6101: Comet-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-28	Extremely gravelly ashy loamy sand, very cobbly ashy loamy coarse sand, very gravelly ashy sandy loam	GP-GM, GM	A-1	0-10	0-25	25-50	25-50	15-40	10-20	20-35	NP-5
	28-46	Very gravelly ashy loamy sand, extremely cobbly ashy sandy loam, very stony ashy sand	GC-GM, GP-GM	A-1	0-30	0-25	25-50	25-50	20-40	5-20	0-25	NP-5
	46-71	Gravelly ashy loamy sand, very cobbly ashy sand, cobbly ashy sandy loam	GM, SC-SM, GW-GM	A-2, A-1	0-40	0-35	35-75	30-70	25-60	10-25	0-25	NP-5
	71-93	Very gravelly ashy loamy sand, extremely gravelly ashy sand, very cobbly ashy sandy loam	GC-GM, GP-GM, GM	A-1	0-50	0-40	25-55	25-50	20-45	10-20	0-25	NP-5
	93-105	Very gravelly ashy fine sandy loam, extremely gravelly ashy sand, very stony ashy loamy sand	GP-GM, GM	A-1	0-50	10-40	25-55	25-55	20-50	10-25	0-30	NP-5
	105-150	Extremely cobbly ashy fine sandy loam, very gravelly ashy sand, extremely gravelly ashy loamy sand	GP-GM, GM	A-1	0-50	10-35	25-55	25-50	20-45	10-25	0-30	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
6101: Carbon-----	cm											
0-2	Slightly decomposed plant material	PT	A-8		0	0	---	---	---	---	---	---
2-6	Moderately decomposed plant material	PT	A-8		0	0	---	---	---	---	---	---
6-31	Very gravelly ashy sandy loam, cobbly ashy loamy fine sand, gravelly ashy sandy loam	GM	A-2, A-1		0	0-15	40-75	40-70	30-60	15-35	25-35	NP-5
31-61	Ashy fine sandy loam, cobbly ashy loamy sand, gravelly ashy coarse sandy loam	GM, SM	A-4, A-1		0	0-15	45-90	45-90	40-85	20-45	0-30	NP-5
61-93	Ashy fine sandy loam, gravelly ashy loamy sand, gravelly ashy very fine sandy loam	GM, SM	A-4, A-1		0	0-15	60-100	60-100	45-90	25-50	0-35	NP-5
93-150	Extremely gravelly ashy sandy loam, very stony ashy loamy sand, very gravelly ashy fine sandy loam	GM, GP-GM	A-1		0-10	5-25	25-55	25-55	15-40	10-25	0-30	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
6110: Tokaloo-----	cm										Pct	
6110: Tokaloo-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-10	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	10-25	Ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy coarse sandy loam	SC-SM, SM	A-4, A-2	0	0	100	100	60-70	35-40	0-25	NP-5
	25-74	Paragravelly ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-1, A-2	0	0	90-100	90-100	50-60	20-25	0-25	NP-5
	74-90	Gravelly ashy coarse sandy loam, very cobbley ashy loamy sand, very gravelly ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5
	90-150	Gravelly ashy coarse sandy loam, very gravelly ashy loamy sand, very cobbley ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
6110: Kautz-----	cm				Pct	Pct					Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	8-15	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-45	0-25	NP-5
	15-26	Ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-80	35-40	0-25	NP-5
	26-76	Paragravelly ashy loamy sand, paragravelly ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	70-85	25-35	0-25	NP-5
	76-120	Gravelly ashy sandy loam, stony ashy loamy sand, very cobbley ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-30	0-25	NP-5
	120-150	Very gravelly ashy sandy loam, very cobbley ashy coarse sandy loam, very cobbley ashy loamy sand	GC-GM, GW-GM, GM	A-1	0-20	0-25	35-50	30-50	25-40	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
6110: Sunbeam-----	cm										Pct	
	0-3	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-15	Mucky ashy loamy sand, mucky ashy sandy loam	SM	A-4	0	0	100	100	75-85	40-45	20-40	NP-5
	15-32	Ashy fine sandy loam, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SM	A-2, A-4	0	0	100	100	75-85	35-45	20-35	NP-5
	32-52	Ashy fine sandy loam, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SM	A-2, A-4	0	0	80-100	75-100	60-85	30-50	0-30	NP-5
	52-80	Ashy fine sandy loam, paragravelly ashy loamy sand, ashy sandy loam	SM	A-2, A-4	0	0	80-100	75-100	55-85	30-45	0-30	NP-5
	80-150	Ashy fine sandy loam, paragravelly ashy loamy sand, ashy sandy loam	ML, SM	A-2, A-4	0	0	80-100	75-100	65-90	35-55	0-30	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
6120: Kautz-----	cm						<i>Pct</i>	<i>Pct</i>			<i>Pct</i>	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	8-15	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-45	0-25	NP-5
	15-26	Ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-80	35-40	0-25	NP-5
	26-76	Paragravelly ashy loamy sand, paragravelly ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	70-85	25-35	0-25	NP-5
	76-120	Gravelly ashy sandy loam, stony ashy loamy sand, very cobbly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-30	0-25	NP-5
556	120-150	Very gravelly ashy sandy loam, very cobbly ashy coarse sandy loam, very cobbly ashy loamy sand	GC-GM, GW-GM, GM	A-1	0-20	0-25	35-50	30-50	25-40	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
6120: Tokaloo-----	cm										Pct	
6120: Tokaloo-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-10	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	10-25	Ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy coarse sandy loam	SC-SM, SM	A-4, A-2	0	0	100	100	60-70	35-40	0-25	NP-5
	25-74	Paragravelly ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-1, A-2	0	0	90-100	90-100	50-60	20-25	0-25	NP-5
	74-90	Gravelly ashy coarse sandy loam, very cobbley ashy loamy sand, very gravelly ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5
	90-150	Gravelly ashy coarse sandy loam, very gravelly ashy loamy sand, very cobbley ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index	
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200			
					Pct	Pct	---	---	---	---			
6120: Sunbeam-----	cm	Slightly decomposed plant material Mucky ashy loamy sand, mucky ashy sandy loam Ashy fine sandy loam, paragradevally ashy loamy sand, paragradevally ashy sandy loam Ashy fine sandy loam, paragradevally ashy loamy sand, paragradevally ashy sandy loam Ashy fine sandy loam, paragradevally ashy loamy sand, ashy sandy loam Ashy fine sandy loam, paragradevally ashy loamy sand, ashy sandy loam	PT  SM  SM  SM  SM  ML, SM	A-8  A-4  A-2, A-4  A-2, A-4  A-2, A-4  A-2, A-4	0	0	---	---	---	---	Pct	---	
					0	0	100	100	75-85	40-45		20-40	NP-5
					0	0	100	100	75-85	35-45		20-35	NP-5
					0	0	80-100	75-100	60-85	30-50		0-30	NP-5
					0	0	80-100	75-100	55-85	30-45		0-30	NP-5
					0	0	80-100	75-100	65-90	35-55		0-30	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
6125: Tokaloo-----	cm										Pct	
6125: Tokaloo-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-10	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	10-25	Ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy coarse sandy loam	SC-SM, SM	A-4, A-2	0	0	100	100	60-70	35-40	0-25	NP-5
	25-74	Paragravelly ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-1, A-2	0	0	90-100	90-100	50-60	20-25	0-25	NP-5
	74-90	Gravelly ashy coarse sandy loam, very cobbley ashy loamy sand, very gravelly ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5
	90-150	Gravelly ashy coarse sandy loam, very gravelly ashy loamy sand, very cobbley ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
	cm										Pct	
7100: Goldenlakes----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-20	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	75-80	35-40	0-25	NP-5
	20-63	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	65-80	20-30	0-25	NP-5
	63-88	Very stony ashy sandy loam, very cobbley ashy loamy sand, gravelly ashy coarse sandy loam	SC-SM, GM	A-1, A-2	0-20	0-30	35-70	30-70	25-55	15-30	0-25	NP-5
	88-150	Bedrock			---	---	---	---	---	---	---	---
Ingraham----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy sandy loam, ashy sandy loam, paragravelly ashy loamy sand	SC-SM, SM	A-4	0	0	100	100	75-80	40-45	0-25	NP-5
	7-25	Paragravelly ashy loamy coarse sand, ashy sandy loam, paragravelly ashy loamy sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	20-25	0-25	NP-5
	25-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
7100: Kautz-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	8-15	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-45	0-25	NP-5
	15-26	Ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-80	35-40	0-25	NP-5
	26-76	Paragravelly ashy loamy sand, paragravelly ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	70-85	25-35	0-25	NP-5
	76-120	Gravelly ashy sandy loam, stony ashy loamy sand, very cobbley ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-30	0-25	NP-5
	120-150	Very gravelly ashy sandy loam, very cobbley ashy coarse sandy loam, very cobbley ashy loamy sand	GC-GM, GW-GM, GM	A-1	0-20	0-25	35-50	30-50	25-40	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
	cm										Pct	
7110: Kautz-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	8-15	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-45	0-25	NP-5
	15-26	Ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-80	35-40	0-25	NP-5
	26-76	Paragravelly ashy loamy sand, paragravelly ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	70-85	25-35	0-25	NP-5
	76-120	Gravelly ashy sandy loam, stony ashy loamy sand, very cobbley ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-30	0-25	NP-5
	120-150	Very gravelly ashy sandy loam, very cobbley ashy coarse sandy loam, very cobbley ashy loamy sand	GC-GM, GW-GM, GM	A-1	0-20	0-25	35-50	30-50	25-40	10-20	0-25	NP-5
Goldenlakes----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-20	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	75-80	35-40	0-25	NP-5
	20-63	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	65-80	20-30	0-25	NP-5
	63-88	Very stony ashy sandy loam, very cobbley ashy loamy sand, gravelly ashy coarse sandy loam	SC-SM, GM	A-1, A-2	0-20	0-30	35-70	30-70	25-55	15-30	0-25	NP-5
	88-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
7120: Kautz-----	cm						<i>Pct</i>	<i>Pct</i>			<i>Pct</i>	
			0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---
			2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---
			8-15	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-45
			15-26	Ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-80	35-40
			26-76	Paragravelly ashy loamy sand, paragravelly ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	70-85	25-35
			76-120	Gravelly ashy sandy loam, stony ashy loamy sand, very cobbly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-30
564	120-150			Very gravelly ashy sandy loam, very cobbly ashy coarse sandy loam, very cobbly ashy loamy sand	GC-GM, GW-GM, GM	A-1	0-20	0-25	35-50	30-50	25-40	10-20

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
7120: Tokaloo-----	cm										Pct	
7120: Tokaloo-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-10	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	10-25	Ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy coarse sandy loam	SC-SM, SM	A-4, A-2	0	0	100	100	60-70	35-40	0-25	NP-5
	25-74	Paragravelly ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-1, A-2	0	0	90-100	90-100	50-60	20-25	0-25	NP-5
	74-90	Gravelly ashy coarse sandy loam, very cobbley ashy loamy sand, very gravelly ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5
	90-150	Gravelly ashy coarse sandy loam, very gravelly ashy loamy sand, very cobbley ashy sandy loam	SC-SM, GM	A-4, A-1	0	0-30	50-90	45-90	35-70	20-40	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
	cm										Pct	
7120: Goldenlakes----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-20	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	75-80	35-40	0-25	NP-5
	20-63	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	65-80	20-30	0-25	NP-5
	63-88	Very stony ashy sandy loam, very cobble ashy loamy sand, gravelly ashy coarse sandy loam	SC-SM, GM	A-1, A-2	0-20	0-30	35-70	30-70	25-55	15-30	0-25	NP-5
	88-150	Bedrock			---	---	---	---	---	---	---	---
7125: Goldenlakes----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-20	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	100	100	75-80	35-40	0-25	NP-5
	20-63	Paragravelly ashy sandy loam, paragravelly ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	65-80	20-30	0-25	NP-5
	63-88	Very stony ashy sandy loam, very cobble ashy loamy sand, gravelly ashy coarse sandy loam	SC-SM, GM	A-1, A-2	0-20	0-30	35-70	30-70	25-55	15-30	0-25	NP-5
	88-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
	cm										Pct	
7125: Kautz-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	8-15	Ashy sandy loam, ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-45	0-25	NP-5
	15-26	Ashy sandy loam, ashy loamy sand, paragravelly ashy loamy coarse sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-80	35-40	0-25	NP-5
	26-76	Paragravelly ashy loamy sand, paragravelly ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	90-100	90-100	70-85	25-35	0-25	NP-5
	76-120	Gravelly ashy sandy loam, stony ashy loamy sand, very cobbley ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-30	0-25	NP-5
	120-150	Very gravelly ashy sandy loam, very cobbley ashy coarse sandy loam, very cobbley ashy loamy sand	GC-GM, GW-GM, GM	A-1	0-20	0-25	35-50	30-50	25-40	10-20	0-25	NP-5
Ingraham-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy sandy loam, ashy sandy loam, paragravelly ashy loamy sand	SC-SM, SM	A-4	0	0	100	100	75-80	40-45	0-25	NP-5
	7-25	Paragravelly ashy loamy coarse sand, ashy sandy loam, paragravelly ashy loamy sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	20-25	0-25	NP-5
	25-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	Pct	Pct	Pct	Pct		
8100: Riverwash-----	cm	Stratified gravel to sand			---	---	---	---	---	---	---	---
Flett-----	0-150	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-32	Gravelly ashy coarse sandy loam, very cobbly ashy loamy very fine sand, very stony ashy coarse sandy loam	SM, GP-GM	A-2, A-1	0-45	0-30	30-80	25-80	15-55	10-35	25-35	NP-5
	32-85	Very cobbly ashy sand, extremely gravelly ashy sandy loam, extremely stony ashy loamy sand	GP-GM, GW, GC-GM	A-1	0-40	10-30	10-60	10-60	5-50	0-25	0-25	NP-5
	85-115	Extremely cobbly ashy sandy loam, very gravelly ashy coarse sandy loam, extremely stony ashy loamy coarse sand	GP-GM, GC-GM, GP	A-1	0-40	10-30	15-65	10-65	5-40	0-20	0-25	NP-5
	115-150	Extremely cobbly ashy sandy loam, extremely stony ashy coarse sandy loam, very gravelly ashy loamy sand	GC-GM, GM, GP	A-1	0-40	5-30	15-55	10-55	10-40	0-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
8101: Flett-----	cm				Pct	Pct					Pct			
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	4-32	Gravelly ashy coarse sandy loam, very cobbly ashy loamy very fine sand, very stony ashy coarse sandy loam	SM, GP-GM	A-2, A-1	0-45	0-30	30-80	25-80	15-55	10-35	25-35	NP-5		
	32-85	Very cobbly ashy sand, extremely gravelly ashy sandy loam, extremely stony ashy loamy sand	GP-GM, GW, GC-GM	A-1	0-40	10-30	10-60	10-60	5-50	0-25	0-25	NP-5		
	85-115	Extremely cobbly ashy sandy loam, very gravelly ashy coarse sandy loam, extremely stony ashy loamy coarse sand	GP-GM, GC-GM, GP	A-1	0-40	10-30	15-65	10-65	5-40	0-20	0-25	NP-5		
	115-150	Extremely cobbly ashy sandy loam, extremely stony ashy coarse sandy loam, very gravelly ashy loamy sand	GC-GM, GM, GP	A-1	0-40	5-30	15-55	10-55	10-40	0-20	0-25	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8101: Narada-----	cm	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	Pct	---
		Ashy sandy loam, gravelly ashy sandy loam, ashy very fine sandy loam	ML, SM	A-4	0	0-10	75-100	70-100	70-100	40-60		
		Gravelly ashy loamy very fine sand, ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-1, A-4	0	0-10	75-100	70-100	45-70	25-45		
		Gravelly ashy loamy sand, ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-1, A-4	0	0-10	75-100	70-100	45-70	25-45		
		Ashy sandy loam, ashy loamy very fine sand, gravelly ashy loamy sand	CL-ML, ML, GM	A-4	0	0-10	65-100	65-100	60-100	40-70		
		Gravelly ashy sandy loam, ashy coarse sandy loam, very gravelly ashy loamy sand	SC-SM, GM, SM	A-4, A-2, A-1	0-15	0-15	50-100	45-100	35-80	15-45		
		Gravelly ashy sandy loam, ashy coarse sandy loam, very gravelly ashy loamy sand	SC-SM, GM	A-4, A-1	0-15	0-15	50-100	45-100	35-80	15-45		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
8110: Vantrump-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	5-25	Ashy loamy sand, paragravelly ashy sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5		
	25-49	Paragravelly ashy loamy sand, paragravelly ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5		
	49-71	Paragravelly ashy loamy sand, ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	30-45	0-25	NP-5		
	71-80	Paragravelly ashy loamy sand, ashy sandy loam, ashy fine sandy loam	ML, SM	A-4	0	0	80-100	75-100	65-90	40-55	0-30	NP-5		
	80-101	Gravelly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy loamy coarse sand	SC-SM, GP-GM	A-1	0	0-20	35-70	35-70	20-45	10-20	0-25	NP-5		
	101-150	Very cobbly ashy loamy sand, gravelly ashy loamy coarse sand, very gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0	0-20	35-70	35-70	25-60	15-30	0-25	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8110: Laughingwater---	cm	Slightly decomposed plant material Ashy loamy sand, ashy sandy loam Ashy sandy loam, ashy loamy sand Ashy fine sandy loam, paragravelly ashy loamy sand, ashy sandy loam Paragravelly ashy loamy sand, ashy sandy loam, paragravelly ashy sandy loam Ashy fine sandy loam, paragravelly ashy loamy sand, paragravelly ashy sandy loam Gravelly ashy coarse sandy loam, ashy loam, gravelly ashy sandy loam Gravelly ashy coarse sandy loam, ashy loam, very gravelly ashy sandy loam	PT SC-SM, SM SC-SM, SM SM SC-SM, SM ML, SM GM, SM GM	A-8 A-4 A-2, A-4 A-4 A-2, A-4 A-2, A-4 A-4, A-1 A-2, A-1	0	0	---	---	---	---	Pct	---
					0	0	100	100	70-80	40-50	0-25	NP-5
					0	0	100	100	75-90	30-40	0-25	NP-5
					0	0	100	100	70-80	40-50	0-30	NP-5
					0	0	80-100	75-100	55-80	30-50	0-25	NP-5
					0	0	80-100	75-100	60-85	30-60	0-30	NP-5
					0	0-15	50-90	45-90	35-70	20-45	15-35	NP-5
					0-5	0-20	40-70	40-70	30-55	15-35	15-35	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8110: Longmire-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy coarse sandy loam, ashy fine sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8120: Longmire-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy coarse sandy loam, ashy fine sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
8120: Laughingwater---	cm				Pct	Pct					Pct			
	0-3	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	3-10	Ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	70-80	40-50	0-25	NP-5		
	10-20	Ashy sandy loam, ashy loamy sand	SC-SM, SM	A-2, A-4	0	0	100	100	75-90	30-40	0-25	NP-5		
	20-32	Ashy fine sandy loam, paragradevally ashy loamy sand, ashy sandy loam	SM	A-4	0	0	100	100	70-80	40-50	0-30	NP-5		
	32-56	Paragradevally ashy loamy sand, ashy sandy loam, paragradevally ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	30-50	0-25	NP-5		
	56-76	Ashy fine sandy loam, paragradevally ashy loamy sand, paragradevally ashy sandy loam	ML, SM	A-2, A-4	0	0	80-100	75-100	60-85	30-60	0-30	NP-5		
	76-120	Gravelly ashy coarse sandy loam, ashy loam, gravelly ashy sandy loam	GM, SM	A-4, A-1	0	0-15	50-90	45-90	35-70	20-45	15-35	NP-5		
	120-150	Gravelly ashy coarse sandy loam, ashy loam, very gravelly ashy sandy loam	GM	A-2, A-1	0-5	0-20	40-70	40-70	30-55	15-35	15-35	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8120: Vantrump-----	cm	Slightly decomposed plant material Moderately decomposed plant material Ashy loamy sand, paragravelly ashy sandy loam, ashy sandy loam Paragravelly ashy loamy sand, paragravelly ashy coarse sandy loam, ashy sandy loam Paragravelly ashy loamy sand, ashy coarse sandy loam, ashy sandy loam Paragravelly ashy loamy sand, ashy sandy loam, ashy fine sandy loam Gravelly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy loamy coarse sand Very cobbly ashy loamy sand, gravelly ashy loamy coarse sand, very gravelly ashy sandy loam	PT	A-8	0	0	---	---	---	---	Pct	---
			PT	A-8	0	0	---	---	---	---	---	---
			SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5
			SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5
			SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	30-45	0-25	NP-5
			ML, SM	A-4	0	0	80-100	75-100	65-90	40-55	0-30	NP-5
			SC-SM, GP-GM	A-1	0	0-20	35-70	35-70	20-45	10-20	0-25	NP-5
			SC-SM, GM	A-2, A-1	0	0-20	35-70	35-70	25-60	15-30	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
8125: Vantrump-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	5-25	Ashy loamy sand, paragravelly ashy sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5		
	25-49	Paragravelly ashy loamy sand, paragravelly ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5		
	49-71	Paragravelly ashy loamy sand, ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	30-45	0-25	NP-5		
	71-80	Paragravelly ashy loamy sand, ashy sandy loam, ashy fine sandy loam	ML, SM	A-4	0	0	80-100	75-100	65-90	40-55	0-30	NP-5		
	80-101	Gravelly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy loamy coarse sand	SC-SM, GP-GM	A-1	0	0-20	35-70	35-70	20-45	10-20	0-25	NP-5		
	101-150	Very cobbly ashy loamy sand, gravelly ashy loamy coarse sand, very gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0	0-20	35-70	35-70	25-60	15-30	0-25	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8125: Laughingwater---	cm	Slightly decomposed plant material Ashy loamy sand, ashy sandy loam Ashy sandy loam, ashy loamy sand Ashy fine sandy loam, paragravelly ashy loamy sand, ashy sandy loam Paragravelly ashy loamy sand, ashy sandy loam, paragravelly ashy sandy loam Ashy fine sandy loam, paragravelly ashy loamy sand, paragravelly ashy sandy loam Gravelly ashy coarse sandy loam, ashy loam, gravelly ashy sandy loam Gravelly ashy coarse sandy loam, ashy loam, very gravelly ashy sandy loam	PT	A-8	0	0	---	---	---	---	---	---
			SC-SM, SM	A-4	0	0	100	100	70-80	40-50	0-25	NP-5
			SC-SM, SM	A-2, A-4	0	0	100	100	75-90	30-40	0-25	NP-5
			SM	A-4	0	0	100	100	70-80	40-50	0-30	NP-5
			SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	30-50	0-25	NP-5
			ML, SM	A-2, A-4	0	0	80-100	75-100	60-85	30-60	0-30	NP-5
			GM, SM	A-4, A-1	0	0-15	50-90	45-90	35-70	20-45	15-35	NP-5
			GM	A-2, A-1	0-5	0-20	40-70	40-70	30-55	15-35	15-35	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8125: Longmire-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy fine sandy loam, ashy coarse sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8130: Summerland-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-38	Extremely stony ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5
	38-84	Extremely bouldery ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5
	84-123	Extremely stony ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5
	123-150	Extremely cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-55	10-50	5-40	5-25	20-35	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8130: Longmire-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy coarse sandy loam, ashy fine sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8150:	cm											
Ghost, warm-----	0-38	Muck	PT	A-8	0	0	---	---	---	---	---	---
	38-90	Muck, woody muck	PT	A-8	0	0	---	---	---	---	---	---
	90-110	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	110-120	Paragravelly ashy coarse sandy loam, ashy sandy loam, ashy loamy sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-85	30-40	0-25	NP-5
	120-130	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	130-145	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	145-150	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	100	100	55-65	20-30	0-25	NP-5
Frogheaven-----	0-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-19	Mucky ashy fine sandy loam, mucky ashy sandy loam	OL, SM	A-5, A-4	0	0	100	100	80-90	45-55	25-45	NP-5
	19-24	Ashy sandy loam, ashy loamy sand	SM	A-2, A-4	0	0	100	100	75-85	35-45	20-35	NP-5
	24-34	Paragravelly ashy loamy sand, ashy fine sandy loam, ashy sandy loam	ML, SM	A-4	0	0	100	100	80-90	45-55	0-30	NP-5
	34-60	Paragravelly ashy loamy sand, paragravelly ashy sandy loam, ashy coarse sandy loam	SC-SM, SM	A-4	0	0	100	100	75-85	40-45	0-25	NP-5
	60-75	Paragravelly ashy loamy sand, ashy fine sandy loam, ashy sandy loam	ML, SM	A-2, A-4	0	0	80-100	75-100	50-90	35-55	0-30	NP-5
	75-90	Paragravelly ashy loamy sand, ashy fine sandy loam, ashy sandy loam	SM	A-2, A-4	0	0	80-100	75-100	55-80	30-50	0-30	NP-5
	90-150	Paragravelly ashy loamy sand, ashy fine sandy loam, ashy sandy loam	SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-30	NP-5
8200:	0-150	Stratified gravel to sand			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8200: Flett, cold-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-32	Gravelly ashy coarse sandy loam, very cobbly ashy loamy very fine sand, very stony ashy coarse sandy loam	SM, GP-GM	A-2, A-1	0-45	0-30	30-80	25-80	15-55	10-35	25-35	NP-5
	32-85	Very cobbly ashy sand, extremely gravelly ashy sandy loam, extremely stony ashy loamy sand	GP-GM, GW, GC-GM	A-1	0-40	10-30	10-60	10-60	5-50	0-25	0-25	NP-5
	85-115	Extremely cobbly ashy sandy loam, very gravelly ashy coarse sandy loam, extremely stony ashy loamy coarse sand	GP-GM, GC-GM, GP	A-1	0-40	10-30	15-65	10-65	5-40	0-20	0-25	NP-5
	115-150	Extremely cobbly ashy sandy loam, extremely stony ashy coarse sandy loam, very gravelly ashy loamy sand	GC-GM, GM, GP	A-1	0-40	5-30	15-55	10-55	10-40	0-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8201: Mysticlake-----	cm										Pct	
	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-3	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-6	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	6-20	Medial loamy sand, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	20-32	Medial fine sandy loam, paragravelly medial loamy sand, paragravelly medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	32-48	Medial sandy loam, paragravelly medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	48-70	Medial fine sandy loam, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-45	NP-5
	70-120	Medial sandy loam, paragravelly medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	120-150	Gravelly medial loam, gravelly medial sandy loam, very gravelly medial coarse sandy loam	GM, SM	A-1, A-2	0-5	0-20	45-75	45-75	30-60	15-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
8201: Unicornpeak-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5		
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5		
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5		
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5		
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5		
	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8201: Williwakas-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
	cm										Pct	
8203: Glacierisland---	0-4	Slightly decomposed plant material	PT	A-8			0	0	---	---	---	---
	4-14	Moderately decomposed plant material	PT	A-8			0	0	---	---	---	---
	14-46	Very gravelly ashy sandy loam, extremely gravelly ashy loamy sand, very cobbly ashy sandy loam	GC-GM, GP-GM, GM	A-1	0-20	10-40	25-60	20-60	15-50	10-25	0-25	NP-5
	46-94	Extremely gravelly ashy loamy sand, very gravelly ashy coarse sandy loam, very cobbly ashy sandy loam	GC-GM, GP-GM, GM	A-2, A-1	0-20	10-40	25-60	20-60	15-50	10-30	0-25	NP-5
	94-150	Very cobbly ashy loamy sand, extremely cobbly ashy sandy loam, extremely gravelly ashy sandy loam	GC-GM, GP-GM, GM	A-1	0-20	10-40	25-60	20-60	15-50	10-25	0-25	NP-5
Sheepskull-----	0-2	Slightly decomposed plant material	PT	A-8			0	0	---	---	---	---
	2-30	Very gravelly ashy loamy sand, very gravelly ashy sandy loam, extremely cobbly ashy loamy sand	GC-GM, GP-GM, GM	A-1	0-20	10-40	25-60	20-60	15-45	10-25	0-25	NP-5
	30-64	Very gravelly ashy loamy sand, extremely cobbly ashy sandy loam, extremely cobbly ashy coarse sandy loam	GC-GM, GP-GM, GM	A-1	0-20	10-40	25-60	20-60	15-50	10-30	0-25	NP-5
	64-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
8203: Sluiskin-----	cm	Slightly decomposed plant material	PT GC-GM, GM, GP-GM	A-8 A-1	Pct 0-20	Pct 0	---	---	---	---	Pct 0-25	--- NP-5
		Very gravelly ashy loamy sand, very gravelly ashy sandy loam, extremely cobbly ashy loamy sand					25-60	20-60	15-50	10-25		
		Extremely cobbly ashy loamy sand, very gravelly ashy loamy sand, very gravelly ashy sandy loam					25-60	20-60	15-50	10-25		
		Bedrock					---	---	---	---		
							---	---	---	---		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8210: Mysticlake-----	cm										Pct	
	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-3	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-6	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	6-20	Medial loamy sand, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	20-32	Medial fine sandy loam, paragradevally medial loamy sand, paragradevally medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	32-48	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	48-70	Medial fine sandy loam, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-45	NP-5
	70-120	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	120-150	Gravelly medial loam, gravelly medial sandy loam, very gravelly medial coarse sandy loam	GM, SM	A-1, A-2	0-5	0-20	45-75	45-75	30-60	15-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	Pct	Pct	Pct	Pct		
8210: Unicornpeak-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5
	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8210: Tipsoo-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-9	Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5
	9-42	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	42-57	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	OH, SM	A-5	0	0	100	100	70-80	45-55	50-60	NP-5
	57-73	Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand	SM	A-5, A-2	0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5
	73-110	Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5
	110-150	Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM	A-1, A-5, A-2	0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8211: Owyhigh-----	cm	Slightly decomposed plant material Moderately decomposed plant material Medial loamy sand, medial sandy loam Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam Medial coarse sandy loam, paragravelly medial loamy sand, paragravelly medial sandy loam Medial fine sandy loam, gravelly medial coarse sandy loam, paragravelly medial sandy loam Bedrock	PT	A-8	0	0	---	---	---	---	Pct	---
				A-8	0	0	---	---	---	---	---	---
				A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5
				A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
				A-4, A-5	0	0	100	100	70-80	45-50	20-60	NP-5
				A-5, A-2	0	0-20	75-100	75-100	55-80	30-50	50-60	NP-5
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Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8211: Mysticlake-----	cm										Pct	
	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-3	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-6	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	6-20	Medial loamy sand, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	20-32	Medial fine sandy loam, paragradevally medial loamy sand, paragradevally medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	32-48	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	48-70	Medial fine sandy loam, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-45	NP-5
	70-120	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	120-150	Gravelly medial loam, gravelly medial sandy loam, very gravelly medial coarse sandy loam	GM, SM	A-1, A-2	0-5	0-20	45-75	45-75	30-60	15-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8211: Williwakas-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8220: Tipsoo-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-9	Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5
	9-42	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	42-57	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	OH, SM	A-5	0	0	100	100	70-80	45-55	50-60	NP-5
	57-73	Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand	SM	A-5, A-2	0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5
	73-110	Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5
	110-150	Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM	A-1, A-5, A-2	0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8220: Unicornpeak-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5
	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8220: Mysticlake-----	cm										Pct	
	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-3	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-6	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	6-20	Medial loamy sand, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	20-32	Medial fine sandy loam, paragradevally medial loamy sand, paragradevally medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	32-48	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	48-70	Medial fine sandy loam, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-45	NP-5
	70-120	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	120-150	Gravelly medial loam, gravelly medial sandy loam, very gravelly medial coarse sandy loam	GM, SM	A-1, A-2	0-5	0-20	45-75	45-75	30-60	15-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8225: Mysticlake-----	cm										Pct	
	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-3	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-6	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	6-20	Medial loamy sand, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	20-32	Medial fine sandy loam, paragravelly medial loamy sand, paragravelly medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	32-48	Medial sandy loam, paragravelly medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	48-70	Medial fine sandy loam, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-45	NP-5
	70-120	Medial sandy loam, paragravelly medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5
	120-150	Gravelly medial loam, gravelly medial sandy loam, very gravelly medial coarse sandy loam	GM, SM	A-1, A-2	0-5	0-20	45-75	45-75	30-60	15-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
8225: Unicornpeak-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5		
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5		
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5		
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5		
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5		
	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
8225: Tipsoo-----  600	cm				Pct	Pct					Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-9	Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5
	9-42	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	42-57	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	OH, SM	A-5	0	0	100	100	70-80	45-55	50-60	NP-5
	57-73	Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand	SM	A-5, A-2	0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5
	73-110	Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5
	110-150	Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM	A-1, A-5, A-2	0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
8230: Summerland, cold	cm				Pct	Pct					Pct			
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-38	Extremely stony ashy sandy loam, very cobbley ashy loamy sand, very gravelly ashy sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5		
	38-84	Extremely bouldery ashy sandy loam, very cobbley ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5		
	84-123	Extremely stony ashy sandy loam, very cobbley ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5		
	123-150	Extremely cobbley ashy sandy loam, very cobbley ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-55	10-50	5-40	5-25	20-35	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8230: Tipsoo-----  602	cm	Slightly decomposed plant material Moderately decomposed plant material Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	PT PT SM SM OH, SM SM GM, SM GM	A-8 A-8 A-4, A-5 A-4, A-5 A-5 A-5, A-2 A-1, A-2 A-1, A-5, A-2	0	0	---	---	---	---	Pct	---
					0	0	---	---	---	---	---	---
					100	100	75-80	40-45	20-60	NP-5	NP-5	NP-5
					0	0	100	100	75-85	40-50	20-60	NP-5
					100	100	70-80	45-55	50-60	NP-5	NP-5	NP-5
					0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5
					0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5
					40-70	35-70	30-65	15-40	30-45	NP-5	NP-5	NP-5
					0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5
					40-70	35-70	30-65	15-40	30-45	NP-5	NP-5	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8250: Ghost-----	cm										Pct	
	0-38	Muck	PT	A-8	0	0	---	---	---	---	---	---
	38-90	Muck, woody muck	PT	A-8	0	0	---	---	---	---	---	---
	90-110	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	110-120	Paragravelly ashy coarse sandy loam, ashy sandy loam, ashy loamy sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-85	30-40	0-25	NP-5
	120-130	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	130-145	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	145-150	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	100	100	55-65	20-30	0-25	NP-5
Williwakas-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8250: Mountwow, moist	cm	Slightly decomposed plant material Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	PT	A-8	0	0	---	---	---	---	Pct	---
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
			SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
			ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
			SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
			SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
			SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5
			GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8250: Mountwow, moist	cm										Pct	
8250: Mountwow, moist	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
8251: Mountwow, moist	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
605	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5
	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8251: Mountwow, moist	cm										Pct	
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5
	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
606 Williwakas-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
	cm				Pct	Pct					Pct	
8251: Unicornpeak----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5
	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
8252: Mountwow, moist	cm	Slightly decomposed plant material Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	PT	A-8	0	0	---	---	---	---	Pct	---
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
			SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
			ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
			SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
			SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
			SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5
			GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8252: Mountwow, moist	cm										Pct	
85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1		0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1		0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
Unicornpeak-----  609	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5
	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8252: Williwakas-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5
8255: Ghost-----	0-38	Muck	PT	A-8	0	0	---	---	---	---	---	---
	38-90	Muck, woody muck	PT	A-8	0	0	---	---	---	---	---	---
	90-110	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	110-120	Paragravelly ashy coarse sandy loam, ashy sandy loam, ashy loamy sand	SC-SM, SM	A-4, A-2	0	0	100	100	75-85	30-40	0-25	NP-5
	120-130	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	130-145	Woody muck, muck	PT	A-8	0	0	---	---	---	---	---	---
	145-150	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2	0	0	100	100	55-65	20-30	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
8255: Williwakas-----	cm				Pct	Pct					Pct			
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5		
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5		
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5		
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5		
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index	
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200			
					Pct	Pct	---	---	---	---			
8255: Mount-wow----	cm	Slightly decomposed plant material Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragavelly medial sandy loam, paragavelly medial coarse sandy loam, paragavelly medial loamy coarse sand Medial fine sandy loam, paragavelly medial sandy loam, paragavelly medial loamy fine sand Paragavelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragavelly medial sandy loam, paragavelly medial coarse sandy loam, paragavelly medial loamy coarse sand Paragavelly medial sandy loam, medial coarse sandy loam, paragavelly medial loamy coarse sand Medial fine sandy loam, paragavelly medial sandy loam, medial loamy fine sand Medial sandy loam, paragavelly medial sandy loam, medial loamy fine sand	PT	A-8	0	0	---	---	---	---	Pct	---	
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5	
			SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5	
			ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5	
			SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5	
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5	
			SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5	
			SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5	
			SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5	
			GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5	

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200				
	cm				Pct	Pct					Pct			
8255: Mountwow-----	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
8256: Mountwow-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5		
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5		
	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5		
	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8256: Mountwow-----	cm	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	SM  SM  GM, SM  GP-GM, GM  GP-GM, GM	A-2, A-5  A-4, A-5  A-1, A-5  A-2, A-1  A-2, A-1	0	0	100	100	60-70	30-40	0-45	NP-5
					0	0	100	100	85-95	40-50	15-45	NP-5
					0	0	50-100	50-100	35-85	20-50	25-60	NP-5
					0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
					0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
8256: Williwakas-----	cm				Pct	Pct					Pct			
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5		
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5		
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5		
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5		
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8256: Unicornpeak----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5
	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8257: Wahpenayo-----	cm										Pct	
	0-16	Medial sandy loam, medial loamy sand, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	16-45	Medial sandy loam, medial loamy sand, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-60	NP-5
	45-52	Medial sandy loam, medial fine sandy loam	MH	A-5	0	0	100	100	85-90	50-60	50-60	NP-5
	52-64	Paragravelly medial coarse sandy loam, medial sandy loam, medial loam	MH	A-5	0	0	100	100	95-100	70-80	50-60	NP-10
	64-75	Paragravelly medial sandy loam, medial loam, medial coarse sandy loam	SM	A-2, A-5, A-4	0	0	100	100	60-70	35-45	30-50	NP-10
	75-90	Medial sandy loam, paragravelly medial loamy sand, medial fine sandy loam	ML, SM	A-5, A-4	0	0-10	75-100	75-100	65-90	40-60	20-45	NP-5
	90-150	Bedrock			---	---	---	---	---	---	---	---
Mountwow-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5

## Soil Survey of Mount Rainier National Park, Washington

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
8257: Mount-wow-----	cm										Pct	
	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5
	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
8257: Williwakas-----	cm				Pct	Pct					Pct			
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-14	Medial sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	14-26	Paragravelly medial coarse sandy loam, medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	25-35	20-60	NP-5		
	26-36	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	36-43	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	MH, SM	A-4, A-5	0	0	100	100	80-90	45-55	20-60	NP-5		
	43-55	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-45	NP-5		
	55-65	Paragravelly medial sandy loam, medial loamy sand, medial fine sandy loam	SM	A-5, A-2	0	0	80-100	75-100	60-85	20-40	20-60	NP-5		
	65-150	Paragravelly medial loamy sand, medial sandy loam, medial fine sandy loam	SM	A-2, A-5, A-4	0	0	80-100	75-100	60-85	30-50	15-45	NP-5		

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9100: Longmire-----	cm										Pct	
9100: Longmire-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy coarse sandy loam, ashy fine sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
9101: Summerland-----	cm				Pct	Pct					Pct			
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-38	Extremely stony ashy sandy loam, very cobble ashy loamy sand, very gravelly ashy sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5		
	38-84	Extremely bouldery ashy sandy loam, very cobble ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5		
	84-123	Extremely stony ashy sandy loam, very cobble ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5		
	123-150	Extremely cobble ashy sandy loam, very cobble ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-55	10-50	5-40	5-25	20-35	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9110: Longmire-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy coarse sandy loam, ashy fine sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
9110: Arahustan-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	8-20	Ashy sandy loam, ashy loamy sand	SC-SM, SM	A-2	0	0	100	100	75-85	30-35	0-25	NP-5		
	20-36	Ashy fine sandy loam, paragravelly ashy sandy loam, paragravelly ashy loamy sand	SM	A-4, A-2	0	0	80-100	75-100	60-90	25-40	0-30	NP-5		
	36-60	Ashy fine sandy loam, paragravelly ashy loamy sand, ashy sandy loam	SM	A-4, A-2	0	0	80-100	75-100	60-85	30-50	0-30	NP-5		
	60-70	Gravelly ashy coarse sandy loam, very gravelly ashy sandy loam, gravelly ashy fine sandy loam	GM	A-2, A-1	0	0-15	40-70	40-70	30-60	15-35	15-30	NP-5		
	70-150	Bedrock			---	---	---	---	---	---	---	---		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9120: Longmire-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy coarse sandy loam, ashy fine sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
626	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
9120: Arahustan-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-8	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	8-20	Ashy sandy loam, ashy loamy sand	SC-SM, SM	A-2	0	0	100	100	75-85	30-35	0-25	NP-5		
	20-36	Ashy fine sandy loam, paragravelly ashy sandy loam, paragravelly ashy loamy sand	SM	A-4, A-2	0	0	80-100	75-100	60-90	25-40	0-30	NP-5		
	36-60	Ashy fine sandy loam, paragravelly ashy loamy sand, ashy sandy loam	SM	A-4, A-2	0	0	80-100	75-100	60-85	30-50	0-30	NP-5		
	60-70	Gravelly ashy coarse sandy loam, very gravelly ashy sandy loam, gravelly ashy fine sandy loam	GM	A-2, A-1	0	0-15	40-70	40-70	30-60	15-35	15-30	NP-5		
	70-150	Bedrock			---	---	---	---	---	---	---	---		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9120: Vantrump-----  628	cm  0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
		Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
		Ashy loamy sand, paragrainly ashy sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5
		Paragrainly ashy loamy sand, paragrainly ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	35-50	0-25	NP-5
		Paragrainly ashy loamy sand, ashy coarse sandy loam, ashy sandy loam	SC-SM, SM	A-2, A-4	0	0	80-100	75-100	55-80	30-45	0-25	NP-5
		Paragrainly ashy loamy sand, ashy sandy loam, ashy fine sandy loam	ML, SM	A-4	0	0	80-100	75-100	65-90	40-55	0-30	NP-5
		Gravelly ashy sandy loam, very cobbley ashy loamy sand, very gravelly ashy loamy coarse sand	SC-SM, GP-GM	A-1	0	0-20	35-70	35-70	20-45	10-20	0-25	NP-5
		Very cobbley ashy loamy sand, gravelly ashy loamy coarse sand, very gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0	0-20	35-70	35-70	25-60	15-30	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9125: Longmire-----	cm											
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-4	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-7	Paragravelly ashy loamy sand, ashy loamy sand, ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	45-50	0-25	NP-5
	7-19	Ashy coarse sandy loam, ashy fine sandy loam, paragravelly ashy sandy loam, ashy loamy sand	SM	A-2	0	0	100	100	75-85	25-35	0-30	NP-5
	19-35	Paragravelly ashy loamy coarse sand, paragravelly ashy loamy sand, paragravelly ashy sandy loam	SC-SM, SM	A-4	0	0	100	100	75-80	40-50	0-25	NP-5
	35-52	Paragravelly ashy loamy sand, ashy sandy loam, ashy loamy coarse sand	SC-SM, SM	A-2, A-1	0	0	90-100	90-100	50-60	15-25	0-25	NP-5
	52-96	Stony ashy loamy sand, cobbly ashy coarse sandy loam, gravelly ashy sandy loam	SC-SM, GM	A-2, A-1	0-15	0-25	50-75	50-75	35-60	20-35	0-25	NP-5
	96-111	Very cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravely ashy coarse sandy loam	SC-SM, GM	A-2, A-1	0-15	0-30	40-75	40-75	25-50	15-30	0-25	NP-5
629	111-150	Very gravelly ashy loamy sand, very stony ashy sandy loam, very cobbly ashy coarse sandy loam	GC-GM, GM, GW-GM	A-1	0-20	0-25	35-55	30-55	20-35	10-20	0-25	NP-5

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
9200: Tipsoo-----	cm	Slightly decomposed plant material Moderately decomposed plant material Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	PT PT SM SM OH, SM SM GM, SM GM	A-8 A-8 A-4, A-5 A-4, A-5 A-5 A-5, A-2 A-1, A-2 A-1, A-5, A-2	0	0	---	---	---	---	Pct	---
					0	0	---	---	---	---	---	---
					0	0	100	100	75-80	40-45	20-60	NP-5
					0	0	100	100	75-85	40-50	20-60	NP-5
					0	0	100	100	70-80	45-55	50-60	NP-5
					0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5
					0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5
					0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9201: Sluiskin-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-21	Very gravelly ashy loamy sand, very gravelly ashy sandy loam, extremely cobbly ashy loamy sand	GC-GM, GM, GP-GM	A-1	0-20	10-40	25-60	20-60	15-50	10-25	0-25	NP-5
	21-33	Extremely cobbly ashy loamy sand, very gravelly ashy loamy sand, very gravelly ashy sandy loam	GC-GM, GM, GP-GM	A-1	0-20	10-40	25-60	20-60	15-50	10-25	0-25	NP-5
	33-150	Bedrock			---	---	---	---	---	---	---	---
Owyhigh-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	1-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-18	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5
	18-34	Paragrainelly medial loamy sand, medial coarse sandy loam, paragrainelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	34-52	Medial coarse sandy loam, paragrainelly medial loamy sand, paragrainelly medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-60	NP-5
	52-80	Medial fine sandy loam, grainelly medial coarse sandy loam, paragrainelly medial sandy loam	SM	A-5, A-2	0	0-20	75-100	75-100	55-80	30-50	50-60	NP-5
	80-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
9201: Summerland, cold	cm	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	Pct	---
		Extremely stony ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5
		Extremely bouldery ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5
		Extremely stony ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-50	10-50	5-40	5-25	20-35	NP-5
		Extremely cobbly ashy sandy loam, very cobbly ashy loamy sand, very gravelly ashy coarse sandy loam	GW-GM, GM, GP-GM	A-1	0-45	10-35	10-55	10-50	5-40	5-25	20-35	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9210: Tipsoo-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-9	Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5
	9-42	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	42-57	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	OH, SM	A-5	0	0	100	100	70-80	45-55	50-60	NP-5
	57-73	Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand	SM	A-5, A-2	0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5
	73-110	Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5
	110-150	Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM	A-1, A-5, A-2	0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9220: Tipsoo-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-9	Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5
	9-42	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	42-57	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	OH, SM	A-5	0	0	100	100	70-80	45-55	50-60	NP-5
	57-73	Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand	SM	A-5, A-2	0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5
	73-110	Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5
	110-150	Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM	A-1, A-5, A-2	0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
9220: Mysticlake-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	1-3	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	3-6	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	6-20	Medial loamy sand, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	20-32	Medial fine sandy loam, paragradevally medial loamy sand, paragradevally medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5		
	32-48	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5		
	48-70	Medial fine sandy loam, paragradevally medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-45	NP-5		
	70-120	Medial sandy loam, paragradevally medial loamy sand, medial fine sandy loam	ML, MH	A-4, A-5	0	0	100	100	80-90	50-55	20-60	NP-5		
	120-150	Gravelly medial loam, gravelly medial sandy loam, very gravelly medial coarse sandy loam	GM, SM	A-1, A-2	0-5	0-20	45-75	45-75	30-60	15-35	30-50	NP-10		

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
9225: Tipsoo-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	5-9	Paragravelly medial loamy sand, medial sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-80	40-45	20-60	NP-5		
	9-42	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5		
	42-57	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	OH, SM	A-5	0	0	100	100	70-80	45-55	50-60	NP-5		
	57-73	Medial sandy loam, paragravelly medial coarse sandy loam, medial loamy sand	SM	A-5, A-2	0	0-10	90-100	85-100	70-85	30-40	20-60	NP-5		
	73-110	Gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0-25	0-30	50-75	45-75	35-65	20-35	50-60	NP-5		
	110-150	Very gravelly medial coarse sandy loam, gravelly medial fine sandy loam, gravelly medial sandy loam	GM	A-1, A-5, A-2	0-20	0-25	40-70	35-70	30-65	15-40	30-45	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
	cm										Pct	
9225: Ipsut-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	5-8	Medial sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	30-35	20-60	NP-5
	8-18	Medial fine sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	18-30	Medial coarse sandy loam, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	30-40	Medial fine sandy loam, paragravelly medial coarse sandy loam, medial sandy loam	SM	A-2, A-5	0	0-10	75-100	75-100	55-85	30-50	50-60	NP-5
	40-150	Bedrock			---	---	---	---	---	---	---	---
9250: Burroughs, moist	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-16	Medial sandy loam, medial fine sandy loam	OH, SM	A-5	0	0	100	100	80-90	45-55	50-60	NP-5
	16-50	Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-60	NP-5
	50-68	Gravelly medial coarse sandy loam, gravelly medial loam, gravelly medial sandy loam	GM	A-1, A-2	0	0-25	45-70	40-70	30-55	20-35	50-60	NP-10
	68-80	Gravelly medial fine sandy loam, gravelly medial sandy loam, cobbly medial loam	GM	A-2, A-1	0	0-25	45-70	40-70	30-55	15-35	35-50	NP-10
	80-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200				
					Pct	Pct								
9250: Littletahoma, moist-----	cm													
	0-12	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-5		
	12-70	Medial loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-10		
	70-90	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-45	20-60	NP-5		
	90-110	Paragravelly medial sandy loam, paragravelly medial loam, paragravelly medial fine sandy loam	SM	A-5, A-4, A-2	0	0-10	75-100	75-100	60-90	30-50	35-50	NP-10		
	110-150	Gravelly medial loam, very gravelly medial coarse sandy loam, gravelly medial sandy loam	GM, GP-GM	A-2, A-1	0-15	0-25	30-70	30-70	20-60	10-35	30-50	NP-10		
Tatoosh, moist--	0-6	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5		
	6-22	Paragravelly medial coarse sandy loam, paragravelly medial loam, paragravelly medial sandy loam	SM	A-1, A-5, A-2	0	0	70-95	70-95	50-75	25-45	50-60	NP-10		
	22-46	Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, paragravelly medial sandy loam	SM	A-1, A-5, A-2	0	0-10	70-95	65-95	50-75	25-45	20-60	NP-5		
	46-150	Bedrock			---	---	---	---	---	---	---	---		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9251: Sarvant, moist--	cm	Gravelly medial coarse sandy loam, gravelly medial sandy loam	GM	A-1, A-2	0	0-25	45-70	45-70	30-55	20-35	50-60	NP-5
		Very gravelly medial sandy loam, very gravelly medial loam, very cobbly medial coarse sandy loam	GP-GM, GM	A-2, A-1	0-15	10-25	25-50	25-50	20-40	10-25	50-60	NP-10
		Very gravelly medial sandy loam, very gravelly medial loam, very cobbly medial loamy coarse sand	GP-GM, GM	A-2, A-1	0-15	10-25	25-55	25-55	20-45	10-30	20-50	NP-10
		Bedrock			---	---	---	---	---	---	---	---
		Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
Chenuis, moist--	0-3	Gravelly medial coarse sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0	0-25	45-70	45-70	25-50	15-35	50-60	NP-5
	3-15	Very gravelly medial sandy loam, very gravelly medial coarse sandy loam, very cobbly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	20-40	30-60	25-55	20-45	10-30	20-60	NP-5
	15-30	Extremely cobbly medial sandy loam, extremely gravelly medial loamy coarse sand, very gravelly medial loam	GP-GM, GM	A-2, A-1	0-15	25-40	20-60	15-55	15-50	5-30	20-50	NP-10
	30-65	Extremely cobbly medial sandy loam, extremely gravelly medial loamy coarse sand, very gravelly medial loam	GP-GM, GM	A-2, A-1	0-15	25-40	20-60	15-55	10-45	5-30	20-50	NP-10
	65-150											

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9251: Tatoosh, moist--	cm										Pct	
	0-6	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	6-22	Paragravelly medial coarse sandy loam, paragravelly medial loam, paragravelly medial sandy loam	SM	A-1, A-5, A-2	0	0	70-95	70-95	50-75	25-45	50-60	NP-10
	22-46	Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, paragravelly medial sandy loam	SM	A-1, A-5, A-2	0	0-10	70-95	65-95	50-75	25-45	20-60	NP-5
	46-150	Bedrock			---	---	---	---	---	---	---	---
9252: Littletahoma, moist-----	0-12	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-5
	12-70	Medial loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-10
	70-90	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-45	20-60	NP-5
	90-110	Paragravelly medial sandy loam, paragravelly medial loam, paragravelly medial fine sandy loam	SM	A-5, A-4, A-2	0	0-10	75-100	75-100	60-90	30-50	35-50	NP-10
	110-150	Gravelly medial loam, very gravelly medial coarse sandy loam, gravelly medial sandy loam	GM, GP-GM	A-2, A-1	0-15	0-25	30-70	30-70	20-60	10-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9252: Burroughs, moist	cm	Slightly decomposed plant material Medial sandy loam, medial fine sandy loam Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, medial sandy loam Gravelly medial coarse sandy loam, gravelly medial loam, gravelly medial sandy loam Gravelly medial fine sandy loam, gravelly medial sandy loam, cobbly medial loam Bedrock	PT OH, SM SM GM GM --- PT	A-8 A-5 A-4, A-5 A-1, A-2 A-2, A-1 --- A-8	0	0	---	---	---	---	Pct	---
					0	0	100	100	80-90	45-55		
					0	0	100	100	70-80	45-50		
					0	0-25	45-70	40-70	30-55	20-35		
					0	0-25	45-70	40-70	30-55	15-35		
					---	---	---	---	---	---		
					---	---	---	---	---	---		
646 Mountwow, moist	0-2 2-10 10-14 14-26 26-37 37-44	Slightly decomposed plant material Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand Medial sandy loam, medial coarse sandy loam, medial loamy sand	PT SM SM ML, OH, MH SM SM	A-8 A-4, A-5 A-4, A-5 A-4, A-5 A-2 A-4, A-5	0	0	---	---	---	---	Pct	---
					0	0	100	100	75-85	40-50		
					0	0	100	100	65-70	40-45		
					0	0	100	100	85-90	50-60		
					0	0	100	100	75-85	20-35		
					0	0	100	100	40-50	20-40		
					0	0	100	100	75-85	20-60		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
9252: Mountwow, moist	cm				Pct	Pct					Pct			
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5		
	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5		
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5		
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5		
	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
9253: Mountwow, moist	cm	Slightly decomposed plant material Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	PT  SM  SM  ML, OH, MH  SM  SM  SM  SM  GM, SM	A-8  A-4, A-5  A-4, A-5  A-4, A-5  A-2  A-4, A-5  A-4, A-5  A-2, A-5  A-4, A-5  A-1, A-5	0  0  0  0  0  0  0  0  0  0	0  0  0  100  100  100  100  100  100  50-100	---  100  100  100  100  100  100  100  100  50-100	---  75-85  65-70  85-90  75-85  75-85  75-85  60-70  85-95  35-85	---  40-50  40-45  50-60  20-35  40-50  40-50  30-40  40-50  20-50	---  20-60  20-60  25-60  20-40  20-60  0-45  0-45  15-45  NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
9253: Mountwow, moist	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
Littletahoma, moist-----	0-12	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-5		
	12-70	Medial loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-10		
	70-90	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-45	20-60	NP-5		
	90-110	Paragravelly medial sandy loam, paragravelly medial loam, paragravelly medial fine sandy loam	SM	A-2, A-5, A-4	0	0-10	75-100	75-100	60-90	30-50	35-50	NP-10		
	110-150	Gravelly medial loam, very gravelly medial coarse sandy loam, gravelly medial sandy loam	GM, GP-GM	A-2, A-1	0-15	0-25	30-70	30-70	20-60	10-35	30-50	NP-10		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9253: Unicornpeak-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-6	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	6-12	Medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	40-50	20-60	NP-5
	12-32	Paragravelly medial coarse sandy loam, medial fine sandy loam, medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	32-58	Paragravelly medial loamy sand, medial sandy loam, medial coarse sandy loam	SM	A-2, A-5	0	0	100	100	60-75	35-50	20-60	NP-5
	58-72	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	MH, SM	A-2, A-5	0	0	80-100	75-100	65-90	35-55	50-60	NP-5
	72-88	Paragravelly medial sandy loam, medial sandy loam, medial fine sandy loam	ML, SM	A-5, A-2, A-4	0	0	75-100	75-100	65-90	35-55	35-45	NP-5
650	88-150	Gravelly medial fine sandy loam, very gravelly medial coarse sandy loam, gravelly medial loam	GM	A-1, A-2	0-5	0-20	45-70	45-70	35-65	20-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
9254: Mountwow, moist	cm	Slightly decomposed plant material Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	PT	A-8	0	0	---	---	---	---	Pct	---
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
			SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
			ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
			SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
			SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
			SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5
			GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5

## Soil Survey of Mount Rainier National Park, Washington

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9254: Mountwow, moist	cm										Pct	
9254: Mountwow, moist	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
9255: Burroughs-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
9255: Burroughs-----	2-16	Medial sandy loam, medial fine sandy loam	OH, SM	A-5	0	0	100	100	80-90	45-55	50-60	NP-5
	16-50	Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-60	NP-5
	50-68	Gravelly medial coarse sandy loam, gravelly medial loam, gravelly medial sandy loam	GM	A-1, A-2	0	0-25	45-70	40-70	30-55	20-35	50-60	NP-10
	68-80	Gravelly medial fine sandy loam, gravelly medial sandy loam, cobbly medial loam	GM	A-2, A-1	0	0-25	45-70	40-70	30-55	15-35	35-50	NP-10
	80-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9255: Littletahoma----	cm	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam Medial loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam Paragravelly medial sandy loam, paragravelly medial loam, paragravelly medial fine sandy loam Gravelly medial loam, very gravelly medial coarse sandy loam, gravelly medial sandy loam	SM	A-5 A-5 A-4, A-5 A-5, A-4, A-2 A-2, A-1	0	0	100	100	75-85	40-45	50-60	NP-5
					0	0	100	100	75-85	40-45	50-60	NP-10
					0	0	100	100	75-85	40-45	20-60	NP-5
					0	0-10	75-100	75-100	60-90	30-50	35-50	NP-10
					0-15	0-25	30-70	30-70	20-60	10-35	30-50	NP-10
Tatoosh-----	0-6	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-50	50-60	NP-5
	6-22	Paragravelly medial coarse sandy loam, paragravelly medial loam, paragravelly medial sandy loam	SM	A-1, A-5, A-2	0	0	70-95	70-95	50-75	25-45	50-60	NP-10
	22-46	Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, paragravelly medial sandy loam	SM	A-1, A-5, A-2	0	0-10	70-95	65-95	50-75	25-45	20-60	NP-5
	46-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9257: Littletahoma----	cm										Pct	
9257: Littletahoma----	0-12	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-5
9257: Littletahoma----	12-70	Medial loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-10
9257: Littletahoma----	70-90	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-45	20-60	NP-5
9257: Littletahoma----	90-110	Paragravelly medial sandy loam, paragravelly medial loam, paragravelly medial fine sandy loam	SM	A-5, A-4, A-2	0	0-10	75-100	75-100	60-90	30-50	35-50	NP-10
9257: Littletahoma----	110-150	Gravelly medial loam, very gravelly medial coarse sandy loam, gravelly medial sandy loam	GM, GP-GM	A-2, A-1	0-15	0-25	30-70	30-70	20-60	10-35	30-50	NP-10
Burroughs-----	0-2	slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
Burroughs-----	2-16	Medial sandy loam, medial fine sandy loam	OH, SM	A-5	0	0	100	100	80-90	45-55	50-60	NP-5
Burroughs-----	16-50	Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-60	NP-5
Burroughs-----	50-68	Gravelly medial coarse sandy loam, gravelly medial loam, gravelly medial sandy loam	GM	A-1, A-2	0	0-25	45-70	40-70	30-55	20-35	50-60	NP-10
Burroughs-----	68-80	Gravelly medial fine sandy loam, gravelly medial sandy loam, cobbly medial loam	GM	A-2, A-1	0	0-25	45-70	40-70	30-55	15-35	35-50	NP-10
Burroughs-----	80-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9257: Mount-wow-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5
	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9257: Mountwow-----	cm	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
9258: Mountwow----	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1								
658	0-2	slightly decomposed plant material	PT	A-8	0	0	--	--	--	--	--	--
	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5
	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200				
	cm				Pct	Pct					Pct			
9258: Mountwow-----	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5		
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5		
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5		
	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
9258: Littletahoma----	cm				Pct	Pct					Pct	
	0-12	Medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-5
	12-70	Medial loam, paragravelly medial coarse sandy loam, paragravelly medial sandy loam	SM	A-5	0	0	100	100	75-85	40-45	50-60	NP-10
	70-90	Paragravelly medial loamy sand, medial coarse sandy loam, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-45	20-60	NP-5
	90-110	Paragravelly medial sandy loam, paragravelly medial loam, paragravelly medial fine sandy loam	SM	A-5, A-4, A-2	0	0-10	75-100	75-100	60-90	30-50	35-50	NP-10
	110-150	Gravelly medial loam, very gravelly medial coarse sandy loam, gravelly medial sandy loam	GM, GP-GM	A-2, A-1	0-15	0-25	30-70	30-70	20-60	10-35	30-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9258: Wahpenayo-----	cm										Pct	
	0-16	Medial sandy loam, medial loamy sand, paragradeally medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	16-45	Medial sandy loam, medial loamy sand, paragradeally medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	20-60	NP-5
	45-52	Medial sandy loam, medial fine sandy loam	MH	A-5	0	0	100	100	85-90	50-60	50-60	NP-5
	52-64	Paragradeally medial coarse sandy loam, medial sandy loam, medial loam	MH	A-5	0	0	100	100	95-100	70-80	50-60	NP-10
	64-75	Paragradeally medial sandy loam, medial loam, medial coarse sandy loam	SM	A-2, A-5, A-4	0	0	100	100	60-70	35-45	30-50	NP-10
	75-90	Medial sandy loam, paragradeally medial loamy sand, medial fine sandy loam	ML, SM	A-5, A-4	0	0-10	75-100	75-100	65-90	40-60	20-45	NP-5
	90-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9259: Mount-wow-----	cm										Pct	
	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	20-60	NP-5
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML, OH, MH	A-4, A-5	0	0	100	100	85-90	50-60	25-60	NP-5
663	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	20-40	NP-5
	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	20-60	NP-5
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	15-45	NP-5
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-1, A-5	0	0	50-100	50-100	35-85	20-50	25-60	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
9259: Mountwow-----	cm	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
9260: Mountwow, alpine	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
664	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	0-45	NP-5
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML	A-4, A-5	0	0	100	100	85-90	50-60	0-45	NP-5
	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	0-40	NP-5
	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
	cm										Pct	
9260: Mountwow, alpine	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	0-45	NP-5
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-4, A-1, A-5	0	0	50-100	50-100	35-85	20-50	0-45	NP-5
	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
Chenuis, alpine	0-3	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	3-15	Gravelly medial coarse sandy loam, gravelly medial sandy loam	GM, SM	A-1, A-2	0	0-25	45-70	45-70	25-50	15-35	30-45	NP-5
	15-30	Very gravelly medial sandy loam, very gravelly medial coarse sandy loam, very cobbly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	20-40	30-60	25-55	20-45	10-30	0-45	NP-5
	30-65	Extremely cobbly medial sandy loam, extremely gravelly medial loamy coarse sand, very gravelly medial loam	GP-GM, GM	A-2, A-1	0-15	25-40	20-60	15-55	15-50	5-30	0-50	NP-10
	65-150	Extremely cobbly medial sandy loam, extremely gravelly medial loamy coarse sand, very gravelly medial loam	GP-GM, GM	A-2, A-1	0-15	25-40	20-60	15-55	10-45	5-30	0-50	NP-10

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
9260: Meany-----	cm				Pct	Pct					Pct	
	0-21	Very gravelly medial sandy loam, extremely cobbly medial coarse sandy loam, very cobbly medial loamy sand	GP-GM, GM	A-1	0-20	15-35	20-60	20-55	15-40	10-25	20-45	NP-5
	21-72	Very gravelly medial sandy loam, extremely gravelly medial coarse sandy loam, very cobbly medial loamy sand	GP-GM, GM	A-1	0-20	15-35	20-55	20-55	15-40	5-25	20-45	NP-5
	72-104	Very gravelly medial sandy loam, extremely cobbly medial coarse sandy loam, extremely gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-20	15-35	20-60	20-60	15-45	10-30	20-45	NP-5
	104-150	Extremely gravelly medial loamy sand, extremely cobbly medial coarse sandy loam, extremely gravelly medial sandy loam	GW-GM, GP-GM, GM	A-1	5-20	25-40	10-35	10-30	5-25	5-15	20-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9261: Wahpenayo, alpine-----	cm										Pct	
	0-16	Medial sandy loam, medial loamy sand, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	16-45	Medial sandy loam, medial loamy sand, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	0-45	NP-5
	45-52	Medial sandy loam, medial fine sandy loam	ML	A-4, A-5	0	0	100	100	85-90	50-60	35-45	NP-5
	52-64	Paragravelly medial coarse sandy loam, medial sandy loam, medial loam	ML, MH	A-4, A-5	0	0	100	100	95-100	70-80	30-50	NP-10
	64-75	Paragravelly medial sandy loam, medial loam, medial coarse sandy loam	SM	A-2, A-5, A-4	0	0	100	100	60-70	35-45	30-50	NP-10
	75-90	Medial sandy loam, paragravelly medial loamy sand, medial fine sandy loam	ML, SM	A-5, A-4	0	0-10	75-100	75-100	65-90	40-60	0-45	NP-5
	90-150	Bedrock			---	---	---	---	---	---	---	---
Burroughs, alpine-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-16	Medial sandy loam, medial fine sandy loam	ML, SM	A-4, A-5	0	0	100	100	80-90	45-55	35-45	NP-5
	16-50	Paragravelly medial coarse sandy loam, paragravelly medial loamy sand, medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	0-45	NP-5
	50-68	Gravelly medial coarse sandy loam, gravelly medial loam, gravelly medial sandy loam	GM	A-1, A-2	0	0-25	45-70	40-70	30-55	20-35	30-50	NP-10
	68-80	Gravelly medial fine sandy loam, gravelly medial sandy loam, cobbly medial loam	GM	A-2, A-1	0	0-25	45-70	40-70	30-55	15-35	35-50	NP-10
	80-150	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct	---	---	---	---		
9261: Mountwow, alpine	cm	Slightly decomposed plant material Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand Medial sandy loam, medial coarse sandy loam, medial loamy sand Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	PT	A-8	0	0	---	---	---	---	Pct	---
			SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
			SM	A-4, A-5	0	0	100	100	65-70	40-45	0-45	NP-5
			ML	A-4, A-5	0	0	100	100	85-90	50-60	0-45	NP-5
			SM	A-2	0	0	100	100	75-85	20-35	0-40	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
			SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
			SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
			SM	A-4, A-5	0	0	100	100	85-95	40-50	0-45	NP-5
			GM, SM	A-4, A-1, A-5	0	0	50-100	50-100	35-85	20-50	0-45	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
9261: Mountwow, alpine	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5		
9262: Sarvant, alpine	0-9	Gravelly medial coarse sandy loam, gravelly medial sandy loam	GM	A-1, A-2	0	0-25	45-70	45-70	30-55	20-35	30-45	NP-5		
	9-36	Very gravelly medial sandy loam, very gravelly medial loam, very cobbly medial coarse sandy loam	GP-GM, GM	A-2, A-1	0-15	10-25	25-50	25-50	20-40	10-25	30-50	NP-10		
	36-65	Very gravelly medial sandy loam, very gravelly medial loam, very cobbly medial loamy coarse sand	GP-GM, GM	A-2, A-1	0-15	10-25	25-55	25-55	20-45	10-30	0-50	NP-10		
	65-150	Bedrock			---	---	---	---	---	---	---	---		

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
9262: Wahpenayo, alpine-----	cm				Pct	Pct					Pct	
	0-16	Medial sandy loam, medial loamy sand, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	16-45	Medial sandy loam, medial loamy sand, paragravelly medial sandy loam	SM	A-4, A-5	0	0	100	100	70-80	45-50	0-45	NP-5
	45-52	Medial sandy loam, medial fine sandy loam	ML	A-4, A-5	0	0	100	100	85-90	50-60	35-45	NP-5
	52-64	Paragravelly medial coarse sandy loam, medial sandy loam, medial loam	ML, MH	A-4, A-5	0	0	100	100	95-100	70-80	30-50	NP-10
	64-75	Paragravelly medial sandy loam, medial loam, medial coarse sandy loam	SM	A-2, A-5, A-4	0	0	100	100	60-70	35-45	30-50	NP-10
	75-90	Medial sandy loam, paragravelly medial loamy sand, medial fine sandy loam	ML, SM	A-5, A-4	0	0-10	75-100	75-100	65-90	40-60	0-45	NP-5
	90-150	Bedrock			---	---	---	---	---	---	---	---
Mountwow, alpine	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	2-10	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	10-14	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	65-70	40-45	0-45	NP-5
	14-26	Medial fine sandy loam, paragravelly medial sandy loam, paragravelly medial loamy fine sand	ML	A-4, A-5	0	0	100	100	85-90	50-60	0-45	NP-5
	26-37	Paragravelly medial loamy coarse sand, medial coarse sandy loam, medial loamy sand	SM	A-2	0	0	100	100	75-85	20-35	0-40	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9262:	cm										Pct	
Mountwow, alpine	37-44	Medial sandy loam, medial coarse sandy loam, medial loamy sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	44-51	Paragravelly medial sandy loam, paragravelly medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-4, A-5	0	0	100	100	75-85	40-50	0-45	NP-5
	51-60	Paragravelly medial sandy loam, medial coarse sandy loam, paragravelly medial loamy coarse sand	SM	A-2, A-5	0	0	100	100	60-70	30-40	0-45	NP-5
	60-66	Medial fine sandy loam, paragravelly medial sandy loam, medial loamy fine sand	SM	A-4, A-5	0	0	100	100	85-95	40-50	0-45	NP-5
	66-85	Medial sandy loam, paragravelly medial sandy loam, medial loamy fine sand	GM, SM	A-4, A-1, A-5	0	0	50-100	50-100	35-85	20-50	0-45	NP-5
	85-120	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
	120-150	Very gravelly medial sandy loam, very gravelly medial fine sandy loam, gravelly medial loamy sand	GP-GM, GM	A-2, A-1	0-15	0-35	30-70	30-70	20-55	10-35	0-45	NP-5
9263:	Tamanos-----											
Tamanos-----	0-20	Very cobbly ashy sand, very gravelly ashy loamy sand, gravelly ashy loamy sand	GP-GM, SM	A-2, A-1	0	0-40	40-70	40-65	30-55	10-20	0-20	NP
	20-50	Very cobbly ashy loamy coarse sand, extremely gravelly ashy sand, very gravelly ashy loamy sand	SM, GP-GM, GM	A-1	0-20	15-40	40-60	40-55	30-45	10-15	0-20	NP
	50-150	Permanently frozen water			---	---	---	---	---	---	---	---

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>250 mm	75-250 mm	4	10	40	200		
					Pct	Pct						
9263: Glaciers---	cm	---	---	---	---	---	---	---	---	---	Pct	---
9993: Rubbleland, talus-----	0-150				---	---	---	---	---	---	---	---
Rock outcrop----	0-150	Bedrock			---	---	---	---	---	---	---	---
9994: Rubbleland, till	0-150				---	---	---	---	---	---	---	---
Glacierisland---	0-4	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	4-14	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---
	14-46	Very gravelly ashy sandy loam, extremely gravelly ashy loamy sand, very cobbley ashy sandy loam	GC-GM, GP-GM, GM	A-1	0-20	10-40	25-60	20-60	15-50	10-25	0-25	NP-5
	46-94	Extremely gravelly ashy loamy sand, very gravelly ashy coarse sandy loam, very cobbley ashy sandy loam	GC-GM, GP-GM, GM	A-2, A-1	0-20	10-40	25-60	20-60	15-50	10-30	0-25	NP-5
	94-150	Very cobbley ashy loamy sand, extremely cobbley ashy sandy loam, extremely gravelly ashy sandy loam	GC-GM, GP-GM, GM	A-1	0-20	10-40	25-60	20-60	15-50	10-30	0-25	NP-5

Table 21.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index		
			Unified	AASHTO	>250	75-250	4	10	40	200				
					mm	mm								
	cm				Pct	Pct					Pct			
9994: Wonderland----	0-2	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	2-5	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	---	---		
	5-15	Very gravelly ashy fine sandy loam, extremely gravelly ashy loamy sand, extremely cobbley ashy loamy sand	GP-GM, GM	A-2, A-1	0-20	10-40	25-60	20-60	15-55	10-30	0-30	NP-5		
	15-35	Very gravelly ashy sandy loam, extremely cobbley ashy loamy sand, extremely gravelly ashy coarse sandy loam	GC-GM, GP-GM, GM	A-2, A-1	0-20	10-40	25-60	20-60	15-50	10-30	0-25	NP-5		
	35-60	Very gravelly ashy sandy loam, extremely gravelly ashy loamy sand, extremely cobbley ashy coarse sandy loam	GC-GM, GP-GM, GM	A-2, A-1	0-20	10-40	25-60	20-60	15-50	10-30	0-25	NP-5		
	60-100	Very gravelly ashy fine sandy loam, extremely gravelly ashy loamy sand, extremely cobbley ashy sandy loam	GP-GM, GM	A-2, A-1	0-20	5-40	25-60	20-60	15-55	5-30	0-30	NP-5		
	100-150	Extremely gravelly ashy fine sandy loam, very cobbley ashy loamy sand, extremely cobbley ashy sandy loam	GP-GM, GM	A-2, A-1	0-20	5-40	25-60	20-60	15-55	5-30	0-30	NP-5		
9996: Glaciers----	---	---	---	---	---	---	---	---	---	---	---	---		
Rock outcrop----	0-150	Bedrock	---	---	---	---	---	---	---	---	---	---		
W: Water-----	---	---	---	---	---	---	---	---	---	---	---	---		

Soil Survey of Mount Rainier National Park, Washington

**Table 22.--Physical Soil Properties**

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated or the layer consists of organic material.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct						Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
6100: Riverwash-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Comet-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	5	56
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-28	60-85	10-40	0-5	1.10-1.30	50.00-150.00	0.02-0.08	0.0-0.3	1.0-4.0	.10	.32			
	28-46	60-95	0-40	0-5	1.10-1.30	150.00-300.00	0.02-0.05	0.0-0.3	1.0-4.0	.10	.28			
	46-71	60-95	0-40	0-5	1.10-1.30	150.00-300.00	0.02-0.09	0.0-0.3	1.0-4.0	.10	.28			
	71-93	60-95	0-40	0-5	1.10-1.30	150.00-300.00	0.02-0.08	0.0-0.3	0.3-1.0	.10	.32			
	93-105	60-95	0-40	0-5	1.10-1.30	10.00-50.00	0.02-0.07	0.0-0.3	0.3-1.0	.10	.43			
	105-150	60-95	0-40	0-5	1.10-1.30	50.00-150.00	0.02-0.07	0.0-0.2	0.3-1.0	.05	.32			
Water-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6101: Comet-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	5	56
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-28	60-85	10-40	0-5	1.10-1.30	50.00-150.00	0.02-0.08	0.0-0.3	1.0-4.0	.10	.32			
	28-46	60-95	0-40	0-5	1.10-1.30	150.00-300.00	0.02-0.05	0.0-0.3	1.0-4.0	.10	.28			
	46-71	60-95	0-40	0-5	1.10-1.30	150.00-300.00	0.02-0.09	0.0-0.3	1.0-4.0	.10	.28			
	71-93	60-95	0-40	0-5	1.10-1.30	150.00-300.00	0.02-0.08	0.0-0.3	0.3-1.0	.10	.32			
	93-105	60-95	0-40	0-5	1.10-1.30	10.00-50.00	0.02-0.07	0.0-0.3	0.3-1.0	.10	.43			
	105-150	60-95	0-40	0-5	1.10-1.30	50.00-150.00	0.02-0.07	0.0-0.2	0.3-1.0	.05	.32			
Carbon-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	3	5	56
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-31	55-85	14-45	0-7	1.10-1.30	50.00-150.00	0.07-0.13	0.0-0.5	1.0-4.0	.15	.37			
	31-61	55-85	14-45	0-7	1.10-1.30	10.00-300.00	0.05-0.15	0.0-0.5	1.0-4.0	.37	.37			
	61-93	55-85	15-45	0-7	1.10-1.30	10.00-300.00	0.06-0.17	0.0-0.6	0.3-1.0	.43	.43			
	93-150	55-85	15-45	0-7	1.10-1.30	10.00-300.00	0.03-0.10	0.0-0.4	0.3-1.0	.05	.37			
Sunbeam-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	3-15	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-15	.24	.24			
	15-32	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.0-7.0	.24	.24			
	32-52	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	52-80	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	80-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.37	.37			
Riverwash-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
6110: Tokaloo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-10	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	10-25	55-85	8-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.5-4.0	.24	.24			
	25-74	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-3.0	.17	.17			
	74-90	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			
	90-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			
Kautz-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-15	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	15-26	55-85	8-44	1-7	0.80-1.20	50.00-700.00	0.07-0.17	0.1-0.5	1.0-5.0	.24	.24			
	26-76	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-5.0	.24	.24			
	76-120	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.15	.28			
	120-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.10	.28			
675 Sunbeam-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	3-15	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	10-15	.24	.24			
	15-32	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.0-7.0	.24	.24			
	32-52	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	52-80	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	80-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.37	.37			
6120: Kautz-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-15	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	15-26	55-85	8-44	1-7	0.80-1.20	50.00-700.00	0.07-0.17	0.1-0.5	1.0-5.0	.24	.24			
	26-76	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-5.0	.24	.24			
	76-120	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.15	.28			
	120-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.10	.28			
Tokaloo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-10	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	10-25	55-85	8-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.5-4.0	.24	.24			
	25-74	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-3.0	.17	.17			
	74-90	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			
	90-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
6120: Sunbeam-----	cm													
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	3-15	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	10-15	.24	.24			
	15-32	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.0-7.0	.24	.24			
	32-52	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	52-80	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	80-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.37	.37			
Goldenlakes-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-20	55-90	3-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.24	.24			
	20-63	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.15	0.1-0.5	1.0-5.0	.20	.20			
	63-88	55-90	9-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.17	.43			
	88-150	---	---	---	---	---	---	---	---	---	---			
6125: Tokaloo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-10	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	10-25	55-85	8-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.5-4.0	.24	.24			
	25-74	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-3.0	.17	.17			
	74-90	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			
	90-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			
Kautz-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-15	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	15-26	55-85	8-44	1-7	0.80-1.20	50.00-700.00	0.07-0.17	0.1-0.5	1.0-5.0	.24	.24			
	26-76	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-5.0	.24	.24			
	76-120	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.15	.28			
	120-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.10	.28			
Goldenlakes-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-20	55-90	3-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.24	.24			
	20-63	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.15	0.1-0.5	1.0-5.0	.20	.20			
	63-88	55-90	9-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.17	.43			
	88-150	---	---	---	---	---	---	---	---	---	---			
Sunbeam-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	3-15	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	10-15	.24	.24			
	15-32	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.0-7.0	.24	.24			
	32-52	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	52-80	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	80-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.37	.37			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
6125: Ingraham-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	3	86
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.37	.37			
	7-25	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.14	0.1-0.5	1.0-5.0	.28	.28			
	25-150	---	---	---	---	---	---	---	---	---	---			
7100: Goldenlakes-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-20	55-90	3-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.24	.24			
	20-63	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.15	0.1-0.5	1.0-5.0	.20	.20			
	63-88	55-90	9-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.17	.43			
	88-150	---	---	---	---	---	---	---	---	---	---			
Ingraham-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	3	86
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.37	.37			
	7-25	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.14	0.1-0.5	1.0-5.0	.28	.28			
	25-150	---	---	---	---	---	---	---	---	---	---			
Kautz-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-15	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	15-26	55-85	8-44	1-7	0.80-1.20	50.00-700.00	0.07-0.17	0.1-0.5	1.0-5.0	.24	.24			
	26-76	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-5.0	.24	.24			
	76-120	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.15	.28			
	120-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.10	.28			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
7110: Kautz-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-15	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	15-26	55-85	8-44	1-7	0.80-1.20	50.00-700.00	0.07-0.17	0.1-0.5	1.0-5.0	.24	.24			
	26-76	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-5.0	.24	.24			
	76-120	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.15	.28			
	120-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.10	.28			
Goldenlakes-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-20	55-90	3-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.24	.24			
	20-63	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.15	0.1-0.5	1.0-5.0	.20	.20			
	63-88	55-90	9-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.17	.43			
	88-150	---	---	---	---	---	---	---	---	---	---			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
7110: Tokaloo-----	cm													
0-2	---	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	3	86
2-5	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
5-10	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28				
10-25	55-85	8-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.5-4.0	.24	.24				
25-74	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-3.0	.17	.17				
74-90	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32				
90-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32				
Ingraham-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	3	86
2-4	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
4-7	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.37	.37				
7-25	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.14	0.1-0.5	1.0-5.0	.28	.28				
25-150	---	---	---	---	---	---	---	---	---	---	---			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Sunbeam-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
3-15	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	10-15	.24	.24				
15-32	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.0-7.0	.24	.24				
32-52	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24				
52-80	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24				
80-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.37	.37				
7120: Kautz-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
2-8	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
8-15	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28				
15-26	55-85	8-44	1-7	0.80-1.20	50.00-700.00	0.07-0.17	0.1-0.5	1.0-5.0	.24	.24				
26-76	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-5.0	.24	.24				
76-120	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.15	.28				
120-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.10	.28				
Tokaloo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	3	86
2-5	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
5-10	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28				
10-25	55-85	8-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.5-4.0	.24	.24				
25-74	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-3.0	.17	.17				
74-90	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32				
90-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32				
Goldenlakes-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
2-5	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
5-20	55-90	3-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.24	.24				
20-63	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.15	0.1-0.5	1.0-5.0	.20	.20				
63-88	55-90	9-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.17	.43				
88-150	---	---	---	---	---	---	---	---	---	---	---			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
7120: Ingraham-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	3	86
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.37	.37			
	7-25	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.14	0.1-0.5	1.0-5.0	.28	.28			
	25-150	---	---	---	---	---	---	---	---	---	---			
Sunbeam-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	3-15	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	10-15	.24	.24			
	15-32	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.0-7.0	.24	.24			
	32-52	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	52-80	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	80-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.37	.37			
7125: Goldenlakes-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-20	55-90	3-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.24	.24			
	20-63	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.15	0.1-0.5	1.0-5.0	.20	.20			
	63-88	55-90	9-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.17	.43			
	88-150	---	---	---	---	---	---	---	---	---	---			
Kautz-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-15	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	15-26	55-85	8-44	1-7	0.80-1.20	50.00-700.00	0.07-0.17	0.1-0.5	1.0-5.0	.24	.24			
	26-76	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-5.0	.24	.24			
	76-120	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.15	.28			
	120-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-4.0	.10	.28			
Ingraham-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	3	86
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.6	2.0-5.0	.37	.37			
	7-25	55-90	3-38	1-7	0.80-1.20	50.00-700.00	0.06-0.14	0.1-0.5	1.0-5.0	.28	.28			
	25-150	---	---	---	---	---	---	---	---	---	---			
Tokaloo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-10	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.28	.28			
	10-25	55-85	8-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.5-4.0	.24	.24			
	25-74	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.5	1.0-3.0	.17	.17			
	74-90	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			
	90-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.06-0.16	0.0-0.5	0.5-3.0	.10	.32			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
7125: Sunbeam-----	cm													
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	3-15	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	10-15	.24	.24			
	15-32	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.0-7.0	.24	.24			
	32-52	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
	52-80	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.24	.24			
8100: Riverwash-----	80-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.37	.37			
	0-150	---	---	---	---	---	---	---	---	---	---	---	---	
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	5	56
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-32	55-90	10-45	0-7	1.10-1.30	50.00-700.00	0.05-0.10	0.0-0.5	0.3-1.0	.10	.32			
	32-85	55-100	0-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.3-1.0	.02	.20			
Flett-----	85-115	55-90	3-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.1-1.0	.02	.15			
	115-150	55-90	3-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.1-1.0	.10	.17			
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	3-7	55-85	15-45	0-7	1.10-1.30	10.00-150.00	0.14-0.19	0.0-0.6	0.3-1.0	.55	.55			
	7-51	55-90	10-45	0-7	1.10-1.30	50.00-300.00	0.10-0.16	0.0-0.6	0.3-1.0	.32	.32			
	51-75	55-90	10-45	0-7	1.10-1.30	50.00-300.00	0.08-0.16	0.0-0.6	0.3-1.0	.32	.32			
Narada-----	75-90	55-90	3-39	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.3-1.0	.64	.64			
	90-110	55-90	9-45	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.1-1.0	.17	.32			
	110-150	55-90	9-45	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.1-1.0	.15	.32			
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	3-7	55-85	15-45	0-7	1.10-1.30	10.00-150.00	0.14-0.19	0.0-0.6	0.3-1.0	.55	.55			
	7-51	55-90	10-45	0-7	1.10-1.30	50.00-300.00	0.10-0.16	0.0-0.6	0.3-1.0	.32	.32			
Water-----	51-75	55-90	10-45	0-7	1.10-1.30	50.00-300.00	0.08-0.16	0.0-0.6	0.3-1.0	.32	.32			
	75-90	55-90	3-39	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.3-1.0	.64	.64			
	90-110	55-90	9-45	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.1-1.0	.17	.32			
	110-150	55-90	9-45	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.1-1.0	.15	.32			
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	5	56
	3-7	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	5	56
8101: Flett-----	4-32	55-90	10-45	0-7	1.10-1.30	50.00-700.00	0.05-0.10	0.0-0.5	0.3-1.0	.10	.32			
	32-85	55-100	0-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.3-1.0	.02	.20			
	85-115	55-90	3-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.1-1.0	.02	.15			
	115-150	55-90	3-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.1-1.0	.10	.17			
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	3-7	55-85	15-45	0-7	1.10-1.30	10.00-150.00	0.14-0.19	0.0-0.6	0.3-1.0	.55	.55			
Narada-----	7-51	55-90	10-45	0-7	1.10-1.30	50.00-300.00	0.10-0.16	0.0-0.6	0.3-1.0	.32	.32			
	51-75	55-90	10-45	0-7	1.10-1.30	50.00-300.00	0.08-0.16	0.0-0.6	0.3-1.0	.32	.32			
	75-90	55-90	3-39	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.3-1.0	.64	.64			
	90-110	55-90	9-45	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.1-1.0	.17	.32			
	110-150	55-90	9-45	0-7	1.10-1.30	50.00-300.00	0.06-0.16	0.0-0.6	0.1-1.0	.15	.32			
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8101: Frogheaven-----	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			
Riverwash-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
8110: Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			
Laughingwater-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	3-10	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.32	.32			
	10-20	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	2.0-5.0	.24	.24			
	32-56	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-4.0	.28	.28			
	56-76	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.28	.28			
	76-120	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.09-0.22	0.1-0.8	1.0-5.0	.15	.28			
	120-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.07-0.20	0.0-0.7	0.5-4.0	.10	.32			
Longmire-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
	96-111	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.05-0.15	0.0-0.5	0.5-4.0	.10	.28			
	111-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-3.5	.10	.28			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8110: Frogheaven-----	cm													
	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
Ghost, warm-----	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
	38-90	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	90-110	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28			
	120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17			
8120: Longmire-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
	96-111	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.05-0.15	0.0-0.5	0.5-4.0	.10	.28			
	111-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-3.5	.10	.28			
Laughingwater-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	3-10	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.32	.32			
	10-20	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	2.0-5.0	.24	.24			
	32-56	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-4.0	.28	.28			
	56-76	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.28	.28			
	76-120	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.09-0.22	0.1-0.8	1.0-5.0	.15	.28			
	120-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.07-0.20	0.0-0.7	0.5-4.0	.10	.32			
Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8120: Frogheaven-----	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			
Arahustan-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-20	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.24	.24			
	20-36	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.5-5.0	.24	.24			
	36-60	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.43	.43			
	60-70	55-70	21-44	1-10	1.00-1.20	50.00-150.00	0.07-0.16	0.0-0.7	1.0-4.0	.15	.43			
	70-150	---	---	---	---	---	---	---	---	---	---			
8125: Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			
Laughingwater-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	3-10	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.32	.32			
	10-20	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	2.0-5.0	.24	.24			
	32-56	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-4.0	.28	.28			
	56-76	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.28	.28			
	76-120	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.09-0.22	0.1-0.8	1.0-5.0	.15	.28			
	120-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.07-0.20	0.0-0.7	0.5-4.0	.10	.32			
Longmire-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
	96-111	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.05-0.15	0.0-0.5	0.5-4.0	.10	.28			
	111-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-3.5	.10	.28			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8125: Arahustan-----	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-20	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.24	.24			
	20-36	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.5-5.0	.24	.24			
	36-60	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.43	.43			
	60-70	55-70	21-44	1-10	1.00-1.20	50.00-150.00	0.07-0.16	0.0-0.7	1.0-4.0	.15	.43			
Frogheaven-----	70-150	---	---	---	---	---	---	---	---	---	---			
	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			
Ohanapecosh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-14	55-85	10-40	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.37	.37			
	14-30	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-5.0	.37	.37			
	30-45	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.09-0.19	0.1-0.8	1.0-4.0	.37	.37			
	45-150	---	---	---	---	---	---	---	---	---	---			
8130: Summerland-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	8	0
	2-38	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	38-84	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	84-123	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	4.0-9.0	.05	.24			
	123-150	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	3.0-9.0	.05	.24			
Longmire-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
	96-111	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.05-0.15	0.0-0.5	0.5-4.0	.10	.28			
	111-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-3.5	.10	.28			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8130: Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			
Frogheaven-----	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			
8150: Ghost, warm-----	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
	38-90	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	90-110	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28			
	120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17			
Frogheaven-----	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			
Laughingwater----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	3-10	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.32	.32			
	10-20	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	2.0-5.0	.24	.24			
	32-56	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-4.0	.28	.28			
	56-76	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.28	.28			
	76-120	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.09-0.22	0.1-0.8	1.0-5.0	.15	.28			
	120-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.07-0.20	0.0-0.7	0.5-4.0	.10	.32			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8150: Vantrump-----	cm													
0-2	---	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
2-5	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28				
25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37				
49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32				
71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37				
80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17				
101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32				
Water-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8200: Riverwash-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Flett, cold-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	5	56
2-4	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
4-32	55-90	10-45	0-7	1.10-1.30	50.00-700.00	0.05-0.10	0.0-0.5	0.3-1.0	.10	.32				
32-85	55-100	0-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.3-1.0	.02	.20				
85-115	55-90	3-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.1-1.0	.02	.15				
115-150	55-90	3-45	0-7	1.10-1.30	150.00-700.00	0.01-0.10	0.0-0.4	0.1-1.0	.10	.17				
Water-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8201: Mysticlake-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
1-3	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24				
6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24				
20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24				
32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28				
48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24				
70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28				
120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24				
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
2-6	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24				
12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24				
32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24				
58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28				
72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28				
88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32				

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

687

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8201: Williwakas-----	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
Ghost-----	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
	38-90	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	90-110	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28			
	120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17			
Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
8203: Glacierisland-----	0-4	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	3	5	56
	4-14	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	14-46	60-85	14-39	1-7	1.30-1.50	50.00-300.00	0.02-0.09	0.0-0.4	0.0-1.0	.10	.37			
	46-94	60-85	14-39	1-7	1.30-1.50	50.00-300.00	0.02-0.09	0.0-0.4	0.0-1.0	.10	.37			
	94-150	60-85	14-39	1-7	1.30-1.50	50.00-700.00	0.02-0.10	0.0-0.4	0.0-0.5	.10	.37			
Sheepskull-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	5	56
	2-30	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.10	.37			
	30-64	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.10	.49			
	64-150	---	---	---	---	---	---	---	---	---	---			
Sluiskin-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	5	56
	2-21	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.15	.49			
	21-33	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.17	.49			
	33-150	---	---	---	---	---	---	---	---	---	---			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T	
8203: Wonderland-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	5	56
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-15	60-85	13-38	2-10	1.30-1.50	10.00-700.00	0.02-0.10	0.0-0.5	0.0-1.0	.10	.37			
	15-35	60-85	13-38	2-10	1.30-1.50	50.00-700.00	0.02-0.09	0.0-0.5	0.0-1.0	.10	.32			
	35-60	60-85	13-38	2-10	1.30-1.50	50.00-700.00	0.02-0.09	0.0-0.5	0.0-1.0	.10	.32			
	60-100	60-85	5-38	2-10	1.30-1.50	10.00-700.00	0.02-0.10	0.0-0.5	0.0-0.8	.10	.32			
	100-150	60-85	5-38	2-10	1.30-1.50	10.00-700.00	0.02-0.10	0.0-0.5	0.0-0.5	.10	.32			
8210: Mysticlake-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24			
	32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28			
	120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
688 Unicornpeak-----	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
Tipsoo-----	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			
	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
	38-90	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
Ghost-----	90-110	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28			
	120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8211: Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Mysticlake-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24			
	32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28			
	120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
Ipsut-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-8	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.32	.32			
	8-18	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	5.0-10	.37	.37			
	18-30	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	30-40	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	40-150	---	---	---	---	---	---	---	---	---	---			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8211: Mountwow-----	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
8220: Tipsoo-----	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			
690 Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24			
	32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28			
	120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8220: Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
8225: Mysticlake-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24			
	32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28			
	120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24			
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
Tipsoo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8225: Owyhigh-----	cm													
	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Ipsut-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-8	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.32	.32			
	8-18	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	5.0-10	.37	.37			
	18-30	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	30-40	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	40-150	---	---	---	---	---	---	---	---	---	---			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
Williwakas-----	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---			
8230: Summerland, cold--	2-38	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	38-84	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	84-123	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	4.0-9.0	.05	.24			
	123-150	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	3.0-9.0	.05	.24			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---			
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
Tipsoo-----	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8230: Wonderland-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	5	56
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-15	60-85	13-38	2-10	1.30-1.50	10.00-700.00	0.02-0.10	0.0-0.5	0.0-1.0	.10	.37			
	15-35	60-85	13-38	2-10	1.30-1.50	50.00-700.00	0.02-0.09	0.0-0.5	0.0-1.0	.10	.32			
	35-60	60-85	13-38	2-10	1.30-1.50	50.00-700.00	0.02-0.09	0.0-0.5	0.0-1.0	.10	.32			
	60-100	60-85	5-38	2-10	1.30-1.50	10.00-700.00	0.02-0.10	0.0-0.5	0.0-0.8	.10	.32			
	100-150	60-85	5-38	2-10	1.30-1.50	10.00-700.00	0.02-0.10	0.0-0.5	0.0-0.5	.10	.32			
Glacierisland-----	0-4	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	3	5	56
	4-14	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	14-46	60-85	14-39	1-7	1.30-1.50	50.00-300.00	0.02-0.09	0.0-0.4	0.0-1.0	.10	.37			
	46-94	60-85	14-39	1-7	1.30-1.50	50.00-300.00	0.02-0.09	0.0-0.4	0.0-1.0	.10	.37			
	94-150	60-85	14-39	1-7	1.30-1.50	50.00-700.00	0.02-0.10	0.0-0.4	0.0-0.5	.10	.37			
8250: Ghost-----	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
	38-90	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	90-110	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28			
	120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
Mountwow, moist---	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8250: Unicornpeak-----	cm													
0-2	---	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
2-6	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24				
12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24				
32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24				
58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28				
72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28				
88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32				
Water-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8251: Mountwow, moist---	cm													
0-2	---	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28				
10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24				
14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32				
26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20				
37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28				
44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28				
51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24				
60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32				
66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24				
85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32				
120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32				
Williwakas-----	cm													
0-2	---	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24				
14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20				
26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24				
36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28				
43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24				
55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20				
65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28				
Unicornpeak-----	cm													
0-2	---	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
2-6	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24				
12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24				
32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24				
58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28				
72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28				
88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32				

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8251: Ghost-----	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
	38-90	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	90-110	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28			
	120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17			
8252: Mountwow, moist---	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
695 Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8252: Owyhigh-----	cm													
0-1	---	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
1-6	---	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24				
18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24				
34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37				
52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37				
80-150	---	---	---	---	---	---	---	---	---	---	---			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	
8255: Ghost-----	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
38-90	---	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
90-110	---	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28				
120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02				
130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02				
145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17				
696 Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24				
14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20				
26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24				
36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28				
43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24				
55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20				
65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28				
Mountwow-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28				
10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24				
14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32				
26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20				
37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28				
44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28				
51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24				
60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32				
66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24				
85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32				
120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32				

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8255: Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
Water-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8256: Mountwow-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
8256: Wahpenayo-----	cm													
	0-16	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.20	.20	2	3	86
	16-45	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.28	.28			
	45-52	50-70	26-49	1-10	0.80-1.20	50.00-150.00	0.17-0.21	0.1-0.8	5.0-9.0	.43	.43			
	52-64	40-70	28-50	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	5.0-8.0	.55	.55			
	64-75	45-70	20-49	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	3.0-6.0	.37	.37			
	75-90	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.43	.43			
	90-150	---	---	---	---	---	---	---	---	---	---			
Ghost-----	0-38	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02	1	2	134
	38-90	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	90-110	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	110-120	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.8	1.0-5.0	.28	.28			
	120-130	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	130-145	---	---	---	0.10-0.30	5.00-25.00	0.30-0.60	---	25-35	.02	.02			
	145-150	55-85	5-35	1-10	0.80-1.20	50.00-500.00	0.06-0.18	0.1-0.8	0.5-3.0	.17	.17			
	90-150	---	---	---	---	---	---	---	---	---	---			
8257: Wahpenayo-----	0-16	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.20	.20	2	3	86
	16-45	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.28	.28			
	45-52	50-70	26-49	1-10	0.80-1.20	50.00-150.00	0.17-0.21	0.1-0.8	5.0-9.0	.43	.43			
	52-64	40-70	28-50	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	5.0-8.0	.55	.55			
	64-75	45-70	20-49	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	3.0-6.0	.37	.37			
	75-90	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.43	.43			
	90-150	---	---	---	---	---	---	---	---	---	---			
	90-150	---	---	---	---	---	---	---	---	---	---			
Mount-wow-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	90-150	---	---	---	---	---	---	---	---	---	---			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
	90-150	---	---	---	---	---	---	---	---	---	---			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
8257: Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
9100: Arahustan-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-20	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.24	.24			
	20-36	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.5-5.0	.24	.24			
	36-60	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.43	.43			
	60-70	55-70	21-44	1-10	1.00-1.20	50.00-150.00	0.07-0.16	0.0-0.7	1.0-4.0	.15	.43			
	70-150	---	---	---	---	---	---	---	---	---	---			
Ohanapecosh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-14	55-85	10-40	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.37	.37			
	14-30	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-5.0	.37	.37			
	30-45	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.09-0.19	0.1-0.8	1.0-4.0	.37	.37			
	45-150	---	---	---	---	---	---	---	---	---	---			
Longmire-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
	96-111	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.05-0.15	0.0-0.5	0.5-4.0	.10	.28			
	111-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-3.5	.10	.28			

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9100: Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			
9101: Ohanapecosh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-14	55-85	10-40	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.37	.37			
	14-30	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-5.0	.37	.37			
	30-45	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.09-0.19	0.1-0.8	1.0-4.0	.37	.37			
	45-150	---	---	---	---	---	---	---	---	---	---			
Arahustan-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-20	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.24	.24			
	20-36	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.5-5.0	.24	.24			
	36-60	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.43	.43			
	60-70	55-70	21-44	1-10	1.00-1.20	50.00-150.00	0.07-0.16	0.0-0.7	1.0-4.0	.15	.43			
	70-150	---	---	---	---	---	---	---	---	---	---			
Summerland-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	8	0
	2-38	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	38-84	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	84-123	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	4.0-9.0	.05	.24			
	123-150	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	3.0-9.0	.05	.24			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---			
Rubbleland, talus	0-150	---	---	---	---	---	---	---	---	---	---			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct						Kw	Kf	T		
9110: Longmire-----	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
Arahustan-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-20	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.24	.24			
	20-36	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.5-5.0	.24	.24			
	36-60	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.43	.43			
	60-70	55-70	21-44	1-10	1.00-1.20	50.00-150.00	0.07-0.16	0.0-0.7	1.0-4.0	.15	.43			
	70-150	---	---	---	---	---	---	---	---	---	---			
Frogheaven-----	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			
Ohanapecosh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-14	55-85	10-40	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.37	.37			
	14-30	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-5.0	.37	.37			
	30-45	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.09-0.19	0.1-0.8	1.0-4.0	.37	.37			
	45-150	---	---	---	---	---	---	---	---	---	---			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9120: Longmire-----	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
	96-111	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.05-0.15	0.0-0.5	0.5-4.0	.10	.28			
	111-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-3.5	.10	.28			
Arahustan-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-20	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.24	.24			
	20-36	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.5-5.0	.24	.24			
	36-60	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.43	.43			
	60-70	55-70	21-44	1-10	1.00-1.20	50.00-150.00	0.07-0.16	0.0-0.7	1.0-4.0	.15	.43			
	70-150	---	---	---	---	---	---	---	---	---	---			
Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			
Frogheaven-----	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			
	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
Ohanapecohsh-----	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-14	55-85	10-40	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.37	.37			
	14-30	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-5.0	.37	.37			
	30-45	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.09-0.19	0.1-0.8	1.0-4.0	.37	.37			
	45-150	---	---	---	---	---	---	---	---	---	---			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9125: Longmire-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-4	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	4-7	55-85	14-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	2.0-5.0	.32	.32			
	7-19	55-85	8-38	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-5.0	.20	.20			
	19-35	55-85	14-44	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-5.0	.32	.32			
	35-52	55-85	8-38	1-7	0.80-1.20	50.00-700.00	0.07-0.19	0.1-0.6	1.0-4.5	.17	.17			
	52-96	55-85	14-44	1-7	1.00-1.20	50.00-300.00	0.06-0.15	0.1-0.5	0.5-4.0	.17	.32			
	96-111	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.05-0.15	0.0-0.5	0.5-4.0	.10	.28			
	111-150	55-85	8-44	1-7	1.00-1.20	50.00-300.00	0.04-0.11	0.0-0.4	0.5-3.5	.10	.28			
Arahustan-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-8	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	8-20	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.24	.24			
	20-36	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.5-5.0	.24	.24			
	36-60	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.43	.43			
	60-70	55-70	21-44	1-10	1.00-1.20	50.00-150.00	0.07-0.16	0.0-0.7	1.0-4.0	.15	.43			
	70-150	---	---	---	---	---	---	---	---	---	---			
703 Ohanapecohsh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-14	55-85	10-40	1-5	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.4	1.0-5.0	.37	.37			
	14-30	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-5.0	.37	.37			
	30-45	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.09-0.19	0.1-0.8	1.0-4.0	.37	.37			
	45-150	---	---	---	---	---	---	---	---	---	---			
Vantrump-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-25	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.6	1.5-6.0	.28	.28			
	25-49	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.37	.37			
	49-71	55-90	9-44	1-7	0.80-1.20	50.00-300.00	0.08-0.18	0.1-0.6	1.0-5.0	.32	.32			
	71-80	55-90	9-44	1-7	0.80-1.20	10.00-300.00	0.08-0.20	0.1-0.6	1.0-4.5	.37	.37			
	80-101	55-90	3-38	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-4.0	.05	.17			
	101-150	55-90	9-44	1-7	1.00-1.20	50.00-700.00	0.05-0.15	0.0-0.5	0.5-3.0	.15	.32			
Frogheaven-----	0-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---	5	2	134
	6-19	55-70	23-44	1-10	0.80-1.20	50.00-150.00	0.15-0.20	0.1-0.8	10-15	.28	.28			
	19-24	55-85	8-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	3.0-7.0	.24	.24			
	24-34	50-85	13-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.28	.28			
	34-60	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.18	0.1-0.8	1.0-5.0	.24	.24			
	60-75	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.32	.32			
	75-90	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-5.0	.28	.28			
	90-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	0.5-3.0	.32	.32			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9125: Laughingwater-----	cm													
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	3-10	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.32	.32			
	10-20	55-85	5-44	1-10	0.80-1.20	50.00-300.00	0.09-0.18	0.1-0.8	1.0-5.0	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	2.0-5.0	.24	.24			
	32-56	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.8	1.5-4.0	.28	.28			
	56-76	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-4.0	.28	.28			
	76-120	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.09-0.22	0.1-0.8	1.0-5.0	.15	.28			
9200: Owyhigh-----	120-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.07-0.20	0.0-0.7	0.5-4.0	.10	.32			
	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
704 Ipsut-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-8	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.32	.32			
	8-18	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	5.0-10	.37	.37			
	18-30	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	30-40	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	40-150	---	---	---	---	---	---	---	---	---	---			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	3	86
Tipsoo-----	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			
	0-150	---	---	---	---	---	---	---	---	---	---			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9201:														
Sluiskin-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	5	56
	2-21	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.15	.49			
	21-33	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.17	.49			
	33-150	---	---	---	---	---	---	---	---	---	---			
Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Summerland, cold--	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	8	0
	2-38	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	38-84	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.02-0.12	0.0-0.4	5.0-10	.05	.24			
	84-123	55-85	14-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	4.0-9.0	.05	.24			
	123-150	55-85	8-44	1-7	0.80-1.20	150.00-700.00	0.01-0.11	0.0-0.4	3.0-9.0	.05	.24			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Rubbleland, talus	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
9210:														
Tipsoo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			
Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9210: Ipsut-----	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-8	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.32	.32			
	8-18	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	5.0-10	.37	.37			
	18-30	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	30-40	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	40-150	---	---	---	---	---	---	---	---	---	---			
Mysticlake-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24			
	32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28			
	120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
9220: Tipsoo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			
Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9220: Mysticlake-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24			
	32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28			
	120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24			
Ipsut-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-8	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.32	.32			
	8-18	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	5.0-10	.37	.37			
	18-30	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	30-40	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	40-150	---	---	---	---	---	---	---	---	---	---			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
9225: Owyhigh-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	1-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-18	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	18-34	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	34-52	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	52-80	50-70	20-48	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Tipsoo-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	3	86
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-9	55-85	14-44	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.24	.24			
	9-42	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	42-57	55-70	25-44	1-10	0.80-1.20	50.00-150.00	0.11-0.21	0.1-0.8	5.0-10	.28	.28			
	57-73	55-85	5-42	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	2.5-10	.20	.20			
	73-110	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.17	0.1-0.7	3.0-10	.15	.24			
	110-150	55-70	26-44	1-10	1.00-1.20	50.00-150.00	0.06-0.16	0.0-0.6	1.0-5.0	.17	.32			

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9225: Ipsut-----	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	2	134
	2-5	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	5-8	55-85	10-41	1-5	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.4	5.0-10	.32	.32			
	8-18	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	5.0-10	.37	.37			
	18-30	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.37	.37			
	30-40	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.10-0.20	0.1-0.8	3.0-10	.37	.37			
	40-150	---	---	---	---	---	---	---	---	---	---			
Mysticlake-----	0-1	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	1-3	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	3-6	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	6-20	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	20-32	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	5.0-10	.24	.24			
	32-48	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	48-70	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	70-120	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.28	.28			
	120-150	45-70	20-46	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.24			
708 Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
9250: Burroughs, moist--	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-16	50-70	20-49	1-10	0.80-1.20	50.00-100.00	0.17-0.21	0.1-0.8	8.0-10	.28	.28			
	16-50	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	50-68	45-70	20-50	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	5.0-9.0	.20	.37			
	68-80	45-70	20-50	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.20	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9250: Littleahoma, moist-----	0-12	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.11-0.19	0.1-0.8	8.0-10	.20	.20	5	3	86
	12-70	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.11-0.25	0.1-0.8	7.0-10	.24	.24			
	70-90	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	90-110	45-70	20-49	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.24	.24			
	110-150	45-70	20-47	1-10	1.00-1.20	10.00-150.00	0.06-0.22	0.0-0.7	1.0-6.0	.10	.24			
Tatoosh, moist----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---			
Mountowow, moist---	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
9251: Sarvant, moist----	0-9	55-70	25-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.15	.28	2	3	86
	9-36	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.06-0.17	0.0-0.5	5.0-10	.10	.28			
	36-65	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.04-0.17	0.0-0.5	3.0-9.0	.15	.43			
Chenuis, moist----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	3-15	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.10	.24			
	15-30	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.04-0.12	0.0-0.5	5.0-10	.10	.28			
	30-65	45-90	5-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	3.0-9.0	.05	.24			
	65-150	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	1.0-7.0	.05	.24			
Tatoosh, moist----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9251: Rock outcrop-----	cm													
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Rubbleland, talus	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
9252: Littletahoma, moist-----	0-12	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.11-0.19	0.1-0.8	8.0-10	.20	.20	5	3	86
	12-70	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.11-0.25	0.1-0.8	7.0-10	.24	.24			
	70-90	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	90-110	45-70	20-49	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.24	.24			
	110-150	45-70	20-47	1-10	1.00-1.20	10.00-150.00	0.06-0.22	0.0-0.7	1.0-6.0	.10	.24			
Burroughs, moist--	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-16	50-70	20-49	1-10	0.80-1.20	50.00-100.00	0.17-0.21	0.1-0.8	8.0-10	.28	.28			
	16-50	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	50-68	45-70	20-50	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	5.0-9.0	.20	.37			
	68-80	45-70	20-50	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.20	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Mountow, moist---	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Tatoosh, moist----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct						Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9252: Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
9253: Mountwow, moist---	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Littletahoma, moist-----	0-12	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.11-0.19	0.1-0.8	8.0-10	.20	.20	5	3	86
	12-70	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.11-0.25	0.1-0.8	7.0-10	.24	.24			
	70-90	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	90-110	45-70	20-49	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.24	.24			
	110-150	45-70	20-47	1-10	1.00-1.20	10.00-150.00	0.06-0.22	0.0-0.7	1.0-6.0	.10	.24			
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
					g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9253:	cm	Pct	Pct	Pct										
Burroughs, moist--	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-16	50-70	20-49	1-10	0.80-1.20	50.00-100.00	0.17-0.21	0.1-0.8	8.0-10	.28	.28			
	16-50	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	50-68	45-70	20-50	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	5.0-9.0	.20	.37			
	68-80	45-70	20-50	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.20	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
9254:														
Chenuis, moist----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	3-15	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.10	.24			
	15-30	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.04-0.12	0.0-0.5	5.0-10	.10	.28			
	30-65	45-90	5-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	3.0-9.0	.05	.24			
	65-150	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	1.0-7.0	.05	.24			
Sarvant, moist----	0-9	55-70	25-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.15	.28	2	3	86
	9-36	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.06-0.17	0.0-0.5	5.0-10	.10	.28			
	36-65	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.04-0.17	0.0-0.5	3.0-9.0	.15	.43			
	65-150	---	---	---	---	---	---	---	---	---	---			
Mountwow, moist---	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9254:														
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
Tatoosh, moist-----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
9255:														
Burroughs-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-16	50-70	20-49	1-10	0.80-1.20	50.00-100.00	0.17-0.21	0.1-0.8	8.0-10	.28	.28			
	16-50	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	50-68	45-70	20-50	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	5.0-9.0	.20	.37			
	68-80	45-70	20-50	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.20	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Littletahoma-----	0-12	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.11-0.19	0.1-0.8	8.0-10	.20	.20	5	3	86
	12-70	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.11-0.25	0.1-0.8	7.0-10	.24	.24			
	70-90	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	90-110	45-70	20-49	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.24	.24			
	110-150	45-70	20-47	1-10	1.00-1.20	10.00-150.00	0.06-0.22	0.0-0.7	1.0-6.0	.10	.24			
Tatoosh-----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---			

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9255: Mount-wow-----	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
9256: Chenuis-----	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	3-15	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.10	.24			
	15-30	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.04-0.12	0.0-0.5	5.0-10	.10	.28			
	30-65	45-90	5-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	3.0-9.0	.05	.24			
	65-150	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	1.0-7.0	.05	.24			
Sarvant-----	0-9	55-70	25-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.15	.28	2	3	86
	9-36	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.06-0.17	0.0-0.5	5.0-10	.10	.28			
	36-65	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.04-0.17	0.0-0.5	3.0-9.0	.15	.43			
	65-150	---	---	---	---	---	---	---	---	---	---	---	---	
	---	---	---	---	---	---	---	---	---	---	---	---	---	
Tatoosh-----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---	---	---	
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
Rubbleland, talus	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
9257: Littletahoma-----	0-12	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.11-0.19	0.1-0.8	8.0-10	.20	.20	5	3	86
	12-70	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.11-0.25	0.1-0.8	7.0-10	.24	.24			
	70-90	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	90-110	45-70	20-49	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.24	.24			
	110-150	45-70	20-47	1-10	1.00-1.20	10.00-150.00	0.06-0.22	0.0-0.7	1.0-6.0	.10	.24			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct		Kw	Kf	T		
	cm													
9257:														
Burroughs-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-16	50-70	20-49	1-10	0.80-1.20	50.00-100.00	0.17-0.21	0.1-0.8	8.0-10	.28	.28			
	16-50	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	50-68	45-70	20-50	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	5.0-9.0	.20	.37			
	68-80	45-70	20-50	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.20	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Mounttow-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Tatoosh-----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---			
Rock outcrop-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	---
9258:														
Mounttow-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Littletahoma-----	0-12	55-70	20-42	1-10	0.80-1.20	50.00-150.00	0.11-0.19	0.1-0.8	8.0-10	.20	.20	5	3	86
	12-70	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.11-0.25	0.1-0.8	7.0-10	.24	.24			
	70-90	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.24	.24			
	90-110	45-70	20-49	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.24	.24			
	110-150	45-70	20-47	1-10	1.00-1.20	10.00-150.00	0.06-0.22	0.0-0.7	1.0-6.0	.10	.24			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9258: Wahpenayo-----	cm													
	0-16	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.20	.20	2	3	86
	16-45	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	5.0-10	.28	.28			
	45-52	50-70	26-49	1-10	0.80-1.20	50.00-150.00	0.17-0.21	0.1-0.8	5.0-9.0	.43	.43			
	52-64	40-70	28-50	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	5.0-8.0	.55	.55			
	64-75	45-70	20-49	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	3.0-6.0	.37	.37			
	75-90	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	2.0-5.0	.43	.43			
Burroughs-----	90-150	---	---	---	---	---	---	---	---	---	---			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-16	50-70	20-49	1-10	0.80-1.20	50.00-100.00	0.17-0.21	0.1-0.8	8.0-10	.28	.28			
	16-50	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	5.0-10	.24	.24			
	50-68	45-70	20-50	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	5.0-9.0	.20	.37			
	68-80	45-70	20-50	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	3.0-9.0	.20	.37			
	80-150	---	---	---	---	---	---	---	---	---	---			
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
Williwakas-----	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
9259: Chenuis-----	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	3-15	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.10	.24			
	15-30	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.04-0.12	0.0-0.5	5.0-10	.10	.28			
	30-65	45-90	5-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	3.0-9.0	.05	.24			
	65-150	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	1.0-7.0	.05	.24			
Sarvant-----	0-9	55-70	25-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	8.0-10	.15	.28	2	3	86
	9-36	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.06-0.17	0.0-0.5	5.0-10	.10	.28			
	36-65	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.04-0.17	0.0-0.5	3.0-9.0	.15	.43			
	65-150	---	---	---	---	---	---	---	---	---	---			

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
9259:														
Mountwow-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	7.0-14	.28	.28			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	3.0-11	.24	.24			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	3.0-11	.32	.32			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	2.5-10	.20	.20			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	6.0-14	.28	.28			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	2.0-4.0	.28	.28			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	2.0-4.0	.24	.24			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	2.0-4.0	.32	.32			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	5.0-14	.24	.24			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	1.0-2.0	.10	.32			
Unicornpeak-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-6	---	---	---	0.10-0.30	100.00-700.00	0.20-0.40	---	60-95	---	---			
	6-12	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	12-32	50-70	20-46	1-10	0.80-1.20	50.00-150.00	0.12-0.21	0.1-0.8	5.0-10	.24	.24			
	32-58	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	58-72	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	3.0-9.0	.28	.28			
	72-88	50-70	24-49	1-10	0.80-1.20	50.00-150.00	0.13-0.21	0.1-0.8	2.0-8.0	.28	.28			
	88-150	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.08-0.22	0.0-0.7	1.0-5.0	.15	.32			
Tatoosh-----	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	8.0-10	.32	.32	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	8.0-10	.37	.37			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	5.0-9.0	.37	.37			
	46-150	---	---	---	---	---	---	---	---	---	---			
Williwakas-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	5	2	134
	2-14	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	5.0-10	.24	.24			
	14-26	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.20	.20			
	26-36	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	5.0-10	.24	.24			
	36-43	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-9.0	.28	.28			
	43-55	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.21	0.1-0.8	3.0-8.0	.24	.24			
	55-65	55-85	5-38	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	3.0-8.0	.20	.20			
	65-150	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.21	0.1-0.8	1.0-5.0	.28	.28			

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T			
9260: Mountwow, alpine--	cm														
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134	
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	1.0-2.0	.32	.32				
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	0.8-2.0	.32	.32				
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	0.8-2.0	.43	.43				
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	0.3-1.5	.24	.24				
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-2.0	.37	.37				
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	0.5-1.5	.37	.37				
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	0.3-1.0	.32	.32				
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	0.3-1.0	.43	.43				
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	3.0-3.3	.28	.28				
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	0.3-1.0	.10	.37				
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	0.3-1.0	.10	.37				
Chenuis, alpine---	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86	
	3-15	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	1.0-2.0	.15	.28				
	15-30	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.04-0.12	0.0-0.5	1.0-2.0	.10	.37				
	30-65	45-90	5-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	0.3-1.0	.05	.37				
	65-150	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	0.3-1.0	.05	.37				
Meany-----	0-21	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.03-0.12	0.0-0.5	0.8-2.0	.05	.32	5	8	0	
	21-72	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.03-0.12	0.0-0.5	0.5-2.0	.05	.32				
	72-104	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.03-0.12	0.0-0.5	0.5-2.0	.05	.32				
	104-150	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.02-0.07	0.0-0.3	0.3-1.0	.05	.32				
	Riverwash-----	0-150	---	---	---	---	---	---	---	---	---	---	---	---	
Wahpenayo, alpine	0-16	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	0.8-2.0	.28	.28	2	3	86	
	16-45	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	0.8-2.0	.37	.37				
	45-52	50-70	26-49	1-10	0.80-1.20	50.00-150.00	0.17-0.21	0.1-0.8	0.5-2.0	.55	.55				
	52-64	40-70	28-50	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	0.3-1.0	.64	.64				
	64-75	45-70	20-49	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	0.3-1.0	.43	.43				
	75-90	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	0.3-1.0	.55	.55				
	90-150	---	---	---	---	---	---	---	---	---	---	---	---		
	9261: Wahpenayo, alpine	0-16	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	0.8-2.0	.28	.28	2	3	86
	16-45	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	0.8-2.0	.37	.37				
	45-52	50-70	26-49	1-10	0.80-1.20	50.00-150.00	0.17-0.21	0.1-0.8	0.5-2.0	.55	.55				
	52-64	40-70	28-50	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	0.3-1.0	.64	.64				
	64-75	45-70	20-49	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	0.3-1.0	.43	.43				
	75-90	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	0.3-1.0	.55	.55				
	90-150	---	---	---	---	---	---	---	---	---	---	---	---		

## Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct						Kw	Kf	T		
9261: Burroughs, alpine	cm	Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct					
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	2	134
	2-16	50-70	20-49	1-10	0.80-1.20	50.00-100.00	0.17-0.21	0.1-0.8	1.0-2.0	.37	.37			
	16-50	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.07-0.19	0.1-0.8	1.0-2.0	.32	.32			
	50-68	45-70	20-50	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	0.3-1.0	.28	.49			
	68-80	45-70	20-50	1-10	0.80-1.20	10.00-100.00	0.13-0.23	0.1-0.7	0.3-1.0	.24	.49			
Mountwow, alpine--	80-150	---	---	---	---	---	---	---	---	---	---	---	---	
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	1.0-2.0	.32	.32			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	0.8-2.0	.32	.32			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	0.8-2.0	.43	.43			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	0.3-1.5	.24	.24			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-2.0	.37	.37			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	0.5-1.5	.37	.37			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	0.3-1.0	.32	.32			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	0.3-1.0	.43	.43			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	3.0-3.3	.28	.28			
	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	0.3-1.0	.10	.37			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	0.3-1.0	.10	.37			
Chenuis, alpine---	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	3-15	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	1.0-2.0	.15	.28			
	15-30	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.04-0.12	0.0-0.5	1.0-2.0	.10	.37			
	30-65	45-90	5-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	0.3-1.0	.05	.37			
	65-150	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	0.3-1.0	.05	.37			
Meany-----	0-21	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.03-0.12	0.0-0.5	0.8-2.0	.05	.32	5	8	0
	21-72	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.03-0.12	0.0-0.5	0.5-2.0	.05	.32			
	72-104	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.03-0.12	0.0-0.5	0.5-2.0	.05	.32			
	104-150	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.02-0.07	0.0-0.3	0.3-1.0	.05	.32			
9262: Sarvant, alpine---	0-9	55-70	25-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	1.0-2.0	.20	.37	2	3	86
	9-36	45-70	20-50	1-10	1.00-1.20	10.00-150.00	0.06-0.17	0.0-0.5	1.0-2.0	.10	.37			
	36-65	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.04-0.17	0.0-0.5	0.3-1.0	.20	.49			
	65-150	---	---	---	---	---	---	---	---	---	---	---	---	
	0-16	55-85	12-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	0.8-2.0	.28	.28	2	3	86
Wahpenayo, alpine	16-45	55-85	14-44	1-10	0.80-1.20	50.00-300.00	0.08-0.19	0.1-0.8	0.8-2.0	.37	.37			
	45-52	50-70	26-49	1-10	0.80-1.20	50.00-150.00	0.17-0.21	0.1-0.8	0.5-2.0	.55	.55			
	52-64	40-70	28-50	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	0.3-1.0	.64	.64			
	64-75	45-70	20-49	1-10	0.80-1.20	10.00-150.00	0.11-0.27	0.1-0.8	0.3-1.0	.43	.43			
	75-90	50-85	14-49	1-10	0.80-1.20	50.00-300.00	0.08-0.20	0.1-0.8	0.3-1.0	.55	.55			
	90-150	---	---	---	---	---	---	---	---	---	---	---	---	

Soil Survey of Mount Rainier National Park, Washington

Table 22.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
		Pct	Pct	Pct	g/cm <sup>3</sup>	um/sec	cm/cm	Pct	Pct	Kw	Kf	T		
9262: Mountwow, alpine--	cm													
	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	4	2	134
	2-10	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.10-0.20	0.1-0.8	1.0-2.0	.32	.32			
	10-14	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	0.8-2.0	.32	.32			
	14-26	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.20	0.1-0.8	0.8-2.0	.43	.43			
	26-37	55-89	1-36	1-10	0.80-1.20	150.00-700.00	0.06-0.15	0.1-0.8	0.3-1.5	.24	.24			
	37-44	55-89	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.20	0.1-0.8	1.0-2.0	.37	.37			
	44-51	55-89	10-44	1-10	0.80-1.20	50.00-700.00	0.06-0.17	0.1-0.7	0.5-1.5	.37	.37			
	51-60	55-89	6-44	1-10	0.80-1.20	50.00-700.00	0.06-0.19	0.1-0.8	0.3-1.0	.32	.32			
	60-66	55-89	10-44	1-10	0.80-1.20	10.00-150.00	0.12-0.21	0.1-0.8	0.3-1.0	.43	.43			
	66-85	55-89	10-44	1-10	0.80-1.20	50.00-150.00	0.12-0.20	0.1-0.8	3.0-3.3	.28	.28			
Chenuis, alpine---	85-120	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	0.3-1.0	.10	.37			
	120-150	55-89	10-44	1-10	1.00-1.20	10.00-300.00	0.05-0.17	0.0-0.7	0.3-1.0	.10	.37			
	0-3	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	2	3	86
	3-15	55-70	20-44	1-10	1.00-1.20	50.00-150.00	0.09-0.16	0.1-0.7	1.0-2.0	.15	.28			
	15-30	55-85	14-44	1-10	1.00-1.20	50.00-300.00	0.04-0.12	0.0-0.5	1.0-2.0	.10	.37			
	30-65	45-90	5-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	0.3-1.0	.05	.37			
	65-150	45-90	9-50	1-10	1.00-1.20	10.00-500.00	0.02-0.17	0.0-0.5	0.3-1.0	.05	.37			
	0-150	---	---	---	---	---	---	---	---	---	---	---	---	
	0-6	55-70	20-43	1-10	0.80-1.20	50.00-150.00	0.11-0.18	0.1-0.7	0.8-2.0	.43	.43	1	3	86
	6-22	45-70	20-47	1-10	0.80-1.20	10.00-150.00	0.10-0.23	0.1-0.7	0.8-2.0	.43	.43			
	22-46	55-85	10-44	1-10	0.80-1.20	50.00-300.00	0.07-0.17	0.1-0.7	0.3-1.0	.43	.43			
	46-150	---	---	---	---	---	---	---	---	---	---	---	---	
9263: Tamanos-----	0-20	75-100	0-25	0-3	1.10-1.30	150.00-700.00	0.02-0.06	0.0-0.2	0.0-1.0	.10	.17	2	1	220
	20-50	75-100	0-25	0-3	1.10-1.30	150.00-700.00	0.02-0.05	0.0-0.2	0.0-1.0	.05	.17			
	50-150	---	---	---	---	---	---	---	---	---	---	---	---	
Glaciers-----	---	---	---	---	---	---	---	---	---	---	---	---	---	
9993: Rubbleland, talus	0-150	---	---	---	---	---	---	---	---	---	---	---	---	
	0-150	---	---	---	---	---	---	---	---	---	---	---	---	
	0-150	---	---	---	---	---	---	---	---	---	---	---	---	
Sluiskin-----	0-2	---	---	---	0.10-0.30	100.00-700.00	0.10-0.30	---	60-95	---	---	1	5	56
	2-21	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.15	.49			
	21-33	60-85	14-39	1-7	1.30-1.50	50.00-150.00	0.02-0.09	0.0-0.4	0.0-1.0	.17	.49			
	33-150	---	---	---	---	---	---	---	---	---	---	---	---	

Table 22.--Physical Soil Properties--Continued

Table 23.--Chemical Soil Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
6100: Comet-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-28	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	28-46	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	46-71	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	71-93	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	93-105	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	105-150	1.0-4.0	---	5.1-6.0	0	0	0	0
6101: Comet-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-28	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	28-46	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	46-71	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	71-93	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	93-105	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	105-150	1.0-4.0	---	5.1-6.0	0	0	0	0
Carbon-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-31	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	31-61	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	61-93	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	93-150	1.0-4.0	---	5.1-6.0	0	0	0	0
6110: Tokaloo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-10	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-25	5.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	25-74	4.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0
	74-90	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0
	90-150	2.0-8.0	---	5.5-6.0	0	0	0	0
Kautz-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-15	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-26	4.0-11.0	---	5.1-6.0	0	0	0	0
	26-76	4.0-11.0	---	5.1-6.0	0	0	0	0
	76-120	2.0-9.0	---	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	---	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
6110: Sunbeam-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	3-15	17.0-22.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	15-32	6.0-13.0	0.0-5.0	5.1-5.5	0	0	0	0 0 0 0 0
	32-52	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	52-80	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	80-150	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
6120: Kautz-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	8-15	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	15-26	4.0-11.0	---	5.1-6.0	0	0	0	0 0 0 0 0
	26-76	4.0-11.0	---	5.1-6.0	0	0	0	0 0 0 0 0
	76-120	2.0-9.0	---	5.1-6.0	0	0	0	0 0 0 0 0
	120-150	2.0-9.0	---	5.1-6.0	0	0	0	0 0 0 0 0
Tokaloo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	5-10	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	10-25	5.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	25-74	4.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	74-90	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	90-150	2.0-8.0	---	5.5-6.0	0	0	0	0 0 0 0 0
Sunbeam-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	3-15	17.0-22.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	15-32	6.0-13.0	0.0-5.0	5.1-5.5	0	0	0	0 0 0 0 0
	32-52	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	52-80	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	80-150	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
6125: Tokaloo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	5-10	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	10-25	5.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	25-74	4.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	74-90	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	90-150	2.0-8.0	---	5.5-6.0	0	0	0	0 0 0 0 0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meg/100 g	meg/100 g	pH	Pct	Pct	mmhos/cm	
6125: Kautz-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-15	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-26	4.0-11.0	---	5.1-6.0	0	0	0	0
	26-76	4.0-11.0	---	5.1-6.0	0	0	0	0
	76-120	2.0-9.0	---	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	---	5.1-6.0	0	0	0	0
Goldenlakes-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-20	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-63	4.0-11.0	---	5.1-6.0	0	0	0	0
	63-88	2.0-9.0	---	5.1-6.0	0	0	0	0
	88-150	---	---	---	-	-	-	-
7100: Goldenlakes-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-20	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-63	4.0-11.0	---	5.1-6.0	0	0	0	0
	63-88	2.0-9.0	---	5.1-6.0	0	0	0	0
	88-150	---	---	---	-	-	-	-
Ingraham-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-25	4.0-11.0	---	5.1-6.0	0	0	0	0
	25-150	---	---	---	-	-	-	-
Kautz-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-15	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-26	4.0-11.0	---	5.1-6.0	0	0	0	0
	26-76	4.0-11.0	---	5.1-6.0	0	0	0	0
	76-120	2.0-9.0	---	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	---	5.1-6.0	0	0	0	0
7110: Kautz-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-15	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-26	4.0-11.0	---	5.1-6.0	0	0	0	0
	26-76	4.0-11.0	---	5.1-6.0	0	0	0	0
	76-120	2.0-9.0	---	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	---	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
7110: Goldenlakes-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-20	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-63	4.0-11.0	---	5.1-6.0	0	0	0	0
	63-88	2.0-9.0	---	5.1-6.0	0	0	0	0
	88-150	---	---	---	---	---	---	---
7120: Kautz-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-15	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-26	4.0-11.0	---	5.1-6.0	0	0	0	0
	26-76	4.0-11.0	---	5.1-6.0	0	0	0	0
	76-120	2.0-9.0	---	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	---	5.1-6.0	0	0	0	0
Tokaloo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-10	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-25	5.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	25-74	4.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0
	74-90	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0
	90-150	2.0-8.0	---	5.5-6.0	0	0	0	0
Goldenlakes-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-20	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-63	4.0-11.0	---	5.1-6.0	0	0	0	0
	63-88	2.0-9.0	---	5.1-6.0	0	0	0	0
	88-150	---	---	---	---	---	---	---
7125: Goldenlakes-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-20	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-63	4.0-11.0	---	5.1-6.0	0	0	0	0
	63-88	2.0-9.0	---	5.1-6.0	0	0	0	0
	88-150	---	---	---	---	---	---	---

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meg/100 g	meg/100 g	pH	Pct	Pct	mmhos/cm	
7125: Kautz-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-15	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-26	4.0-11.0	---	5.1-6.0	0	0	0	0
	26-76	4.0-11.0	---	5.1-6.0	0	0	0	0
	76-120	2.0-9.0	---	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	---	5.1-6.0	0	0	0	0
Ingraham-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-25	4.0-11.0	---	5.1-6.0	0	0	0	0
	25-150	---	---	---	---	---	---	---
8100: Flett-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-32	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	32-85	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	85-115	0.5-4.0	---	5.1-6.0	0	0	0	0
	115-150	0.5-4.0	---	5.1-6.0	0	0	0	0
8101: Flett-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-32	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	32-85	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	85-115	0.5-4.0	---	5.1-6.0	0	0	0	0
	115-150	0.5-4.0	---	5.1-6.0	0	0	0	0
Narada-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-7	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	7-51	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	51-75	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	75-90	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	90-110	0.5-4.0	---	5.1-6.0	0	0	0	0
	110-150	0.5-4.0	---	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8110: Vantrump-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-25	5.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
	25-49	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	49-71	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	71-80	4.0-10.0	0.0-5.0	5.1-5.5	0	0	0	0
	80-101	2.0-9.0	0.0-5.0	5.1-5.5	0	0	0	0
	101-150	2.0-8.0	0.0-5.0	5.1-5.5	0	0	0	0
Laughingwater-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-10	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-32	6.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	32-56	5.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	56-76	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	76-120	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0
8120: Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8120: Laughingwater-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-10	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-32	6.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	32-56	5.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	56-76	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	76-120	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
Vantrump-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-25	5.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
	25-49	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	49-71	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	71-80	4.0-10.0	0.0-5.0	5.1-5.5	0	0	0	0
	80-101	2.0-9.0	0.0-5.0	5.1-5.5	0	0	0	0
	101-150	2.0-8.0	0.0-5.0	5.1-5.5	0	0	0	0
8125: Vantrump-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-25	5.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
	25-49	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	49-71	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	71-80	4.0-10.0	0.0-5.0	5.1-5.5	0	0	0	0
	80-101	2.0-9.0	0.0-5.0	5.1-5.5	0	0	0	0
	101-150	2.0-8.0	0.0-5.0	5.1-5.5	0	0	0	0
Laughingwater-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-10	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-32	6.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	32-56	5.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	56-76	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	76-120	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	120-150	2.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8125: Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0
8130: Summerland-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-38	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	38-84	11.0-17.0	0.0-5.0	4.5-6.0	0	0	0	0
	84-123	9.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0
	123-150	8.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0
Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0
8150: Ghost, warm-----	0-38	30.0-50.0	0.0-5.0	4.5-5.5	0	0	0	0
	38-90	30.0-50.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	110-120	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	120-130	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	130-145	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	145-150	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0
Frogheaven-----	0-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-19	17.0-22.0	0.0-5.0	4.5-5.5	0	0	0	0
	19-24	8.0-13.0	0.0-5.0	5.1-5.5	0	0	0	0
	24-34	6.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	34-60	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	60-75	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	75-90	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	90-150	2.0-8.0	0.0-5.0	5.1-5.5	0	0	0	0

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth cm	Cation- exchange capacity meq/100 g	Effective cation- exchange capacity meq/100 g	Soil reaction pH	Calcium carbon- ate Pct	Gypsum Pct	Salinity mmhos/cm	Sodium adsorp- tion ratio
8200: Flett, cold-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-32	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	32-85	1.0-4.0	0.0-4.0	5.1-6.0	0	0	0	0
	85-115	0.5-4.0	---	5.1-6.0	0	0	0	0
	115-150	0.5-4.0	---	5.1-6.0	0	0	0	0
8201: Mysticlake-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0
	1-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-6	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	6-20	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-32	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	32-48	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	48-70	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	70-120	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	120-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
8203: Glacierisland-----	0-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-14	---	30.0-40.0	3.5-5.5	0	0	0	0
	14-46	0.5-5.0	---	5.1-6.0	0	0	0	0
	46-94	0.5-5.0	---	5.1-6.0	0	0	0	0
	94-150	0.5-5.0	---	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8203: Sheepskull-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-30	0.5-5.0	---	5.1-6.0	0	0	0	0
	30-64	0.5-5.0	---	5.1-6.0	0	0	0	0
	64-150	---	---	---	-	-	-	-
Sluiskin-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-21	0.5-5.0	---	5.1-6.0	0	0	0	0
	21-33	0.5-5.0	---	5.1-6.0	0	0	0	0
	33-150	---	---	---	-	-	-	-
8210: Mysticlake-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0
	1-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-6	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	6-20	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-32	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	32-48	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	48-70	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	70-120	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	120-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meg/100 g	meg/100 g	pH	Pct	Pct	mmhos/cm	
8211: Owyhigh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0	0 0 0 0 0
	1-6	---	30.0-40.0	3.5-5.5	0	0		
	6-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	18-34	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	34-52	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	52-80	8.0-17.0	0.0-5.0	5.1-6.0	0	0		
	80-150	---	---	---	---	---		
Mysticlake-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0	0 0 0 0 0
	1-3	---	30.0-40.0	3.5-5.5	0	0		
	3-6	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	6-20	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	20-32	11.0-17.0	0.0-5.0	5.1-5.5	0	0		
	32-48	8.0-16.0	0.0-5.0	5.1-5.5	0	0		
	48-70	8.0-14.0	0.0-5.0	5.1-5.5	0	0		
	70-120	8.0-14.0	0.0-5.0	5.1-5.5	0	0		
	120-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0		
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0	0 0 0 0 0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0		
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0		
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0		
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0		
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0		
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0		
8220: Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0	0 0 0 0 0
	2-5	---	30.0-40.0	3.5-5.5	0	0		
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0		
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0		
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0		
Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0.0-5.0	0 0 0 0 0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0 0 0 0 0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0 0 0 0 0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0 0 0 0 0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0 0 0 0 0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0 0 0 0 0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0 0 0 0 0

Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8220: Mysticlake-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0
	1-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-6	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	6-20	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-32	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	32-48	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	48-70	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	70-120	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	120-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
8225: Mysticlake-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0
	1-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-6	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	6-20	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-32	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	32-48	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	48-70	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	70-120	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	120-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
8230: Summerland, cold-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-38	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	38-84	11.0-17.0	0.0-5.0	4.5-6.0	0	0	0	0
	84-123	9.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0
	123-150	8.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8230: Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
8250: Ghost-----	0-38	30.0-50.0	0.0-5.0	4.5-5.5	0	0	0	0
	38-90	30.0-50.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	110-120	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	120-130	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	130-145	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	145-150	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
Mountwow, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0

Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8251: Mount-wow, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
8252: Mount-wow, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8252: Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
8255: Ghost-----	0-38	30.0-50.0	0.0-5.0	4.5-5.5	0	0	0	0
	38-90	30.0-50.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	110-120	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	120-130	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	130-145	30.0-50.0	0.0-5.0	5.1-6.0	0	0	0	0
	145-150	2.0-8.0	0.0-5.0	5.1-6.0	0	0	0	0
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8255: Mount-wow-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
8256: Mount-wow-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0.0-5.0	0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
8257: Wahpenayo-----	0-16	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0 0 0 0 0 0	0 0 0 0 0 0
	16-45	11.0-17.0	0.0-5.0	5.1-5.5	0	0		
	45-52	11.0-16.0	0.0-5.0	5.1-5.5	0	0		
	52-64	11.0-14.0	0.0-5.0	5.1-5.5	0	0		
	64-75	8.0-12.0	0.0-5.0	5.1-5.5	0	0		
	75-90	6.0-11.0	0.0-5.0	5.1-5.5	0	0		
	90-150	---	---	---	---	---		
Mountwow-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0 0	0 0 0 0 0 0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0		
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0		
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0		
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0		
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0		
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0		
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0		
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0		
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0		
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0 0 0 0 0 0	0 0 0 0 0 0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0		
Williwakas-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0 0	0 0 0 0 0 0
	2-14	11.0-17.0	0.0-5.0	4.5-5.5	0	0		
	14-26	11.0-17.0	0.0-5.0	5.1-5.5	0	0		
	26-36	11.0-17.0	0.0-5.0	5.1-5.5	0	0		
	36-43	8.0-16.0	0.0-5.0	5.1-5.5	0	0		
	43-55	8.0-14.0	0.0-5.0	5.1-5.5	0	0		
	55-65	8.0-14.0	0.0-5.0	5.1-5.5	0	0		
	65-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0		
9100: Arahustan-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0 0	0 0 0 0 0 0
	2-8	---	30.0-40.0	3.5-5.5	0	0		
	8-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0		
	20-36	5.0-11.0	0.0-5.0	5.1-6.0	0	0		
	36-60	4.0-9.0	0.0-5.0	5.1-6.0	0	0		
	60-70	4.0-9.0	0.0-5.0	5.1-6.0	0	0		
	70-150	---	---	---	---	---		
Ohanapecosh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0 0 0 0 0 0	0 0 0 0 0 0
	1-3	---	30.0-40.0	3.5-5.5	0	0		
	3-14	4.0-11.0	0.0-5.0	4.5-5.5	0	0		
	14-30	5.0-11.0	0.0-5.0	5.1-6.0	0	0		
	30-45	4.0-9.0	0.0-5.0	5.1-6.0	0	0		
	45-150	---	---	---	---	---		

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9100: Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0
9101: Ohanapecosh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0
	1-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-14	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-30	5.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	30-45	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	45-150	---	---	---	---	---	---	---
Arahustan-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-36	5.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	36-60	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	60-70	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	70-150	---	---	---	---	---	---	---
Summerland-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-38	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	38-84	11.0-17.0	0.0-5.0	4.5-6.0	0	0	0	0
	84-123	9.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0
	123-150	8.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0
9110: Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9110: Arahustan-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-36	5.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	36-60	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	60-70	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	70-150	---	---	---	---	---	---	---
9120: Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0
Arahustan-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-36	5.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	36-60	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	60-70	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	70-150	---	---	---	---	---	---	---
Vantrump-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-25	5.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
	25-49	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	49-71	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	71-80	4.0-10.0	0.0-5.0	5.1-5.5	0	0	0	0
	80-101	2.0-9.0	0.0-5.0	5.1-5.5	0	0	0	0
	101-150	2.0-8.0	0.0-5.0	5.1-5.5	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9125:								
Longmire-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-7	6.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	7-19	4.0-11.0	---	5.1-6.0	0	0	0	0
	19-35	4.0-11.0	---	5.1-6.0	0	0	0	0
	35-52	4.0-10.0	---	5.1-6.0	0	0	0	0
	52-96	2.0-9.0	---	5.1-6.0	0	0	0	0
	96-111	2.0-9.0	---	5.1-6.0	0	0	0	0
	111-150	2.0-8.0	---	5.1-6.0	0	0	0	0
Arahustan-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-8	---	30.0-40.0	3.5-5.5	0	0	0	0
	8-20	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	20-36	5.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	36-60	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	60-70	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	70-150	---	---	---	---	---	---	---
Ohanapecosh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0
	1-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-14	4.0-11.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-30	5.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
	30-45	4.0-9.0	0.0-5.0	5.1-6.0	0	0	0	0
	45-150	---	---	---	---	---	---	---
9200:								
Owyhigh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0
	1-6	---	30.0-40.0	3.5-5.5	0	0	0	0
	6-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	18-34	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	34-52	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	52-80	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0
	80-150	---	---	---	---	---	---	---
Ipsut-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-8	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	8-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	18-30	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	30-40	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0
	40-150	---	---	---	---	---	---	---

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meg/100 g	meg/100 g	pH	Pct	Pct	mmhos/cm	
9200: Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0 0 0 0 0
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0 0 0 0 0
9201: Sluiskin-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	2-21	0.5-5.0	---	5.1-6.0	0	0	0	0 0 0 0 0 0 0 0 0
	21-33	0.5-5.0	---	5.1-6.0	0	0	0	0 0 0 0 0 0 0 0 0
	33-150	---	---	---	-	-	-	- - - - - - - - - -
Owyhigh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	1-6	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	6-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	18-34	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	34-52	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	52-80	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0 0 0 0 0
	80-150	---	---	---	-	-	-	- - - - - - - - - -
Summerland, cold-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	2-38	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	38-84	11.0-17.0	0.0-5.0	4.5-6.0	0	0	0	0 0 0 0 0 0 0 0 0
	84-123	9.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0 0 0 0 0 0 0 0 0
	123-150	8.0-16.0	0.0-5.0	4.5-6.0	0	0	0	0 0 0 0 0 0 0 0 0
9210: Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0 0 0 0 0
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0 0 0 0 0
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0 0 0 0 0

Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9210: Owyhigh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	1-6	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	6-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	18-34	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	34-52	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	52-80	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	80-150	---	---	---	---	---	---	---
9220: Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
Owyhigh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	1-6	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	6-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	18-34	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	34-52	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	52-80	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	80-150	---	---	---	---	---	---	---
Mysticlake-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	1-3	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	3-6	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	6-20	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	20-32	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0 0 0 0 0
	32-48	8.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0 0 0 0 0
	48-70	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0 0 0 0 0
	70-120	8.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0 0 0 0 0
	120-150	4.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0 0 0 0 0
9225: Owyhigh-----	0-1	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	1-6	---	30.0-40.0	3.5-5.5	0	0	0	0 0 0 0 0
	6-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	18-34	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	34-52	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0 0 0 0 0
	52-80	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0 0 0 0 0
	80-150	---	---	---	---	---	---	---

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meg/100 g	meg/100 g	pH	Pct	Pct	mmhos/cm	
9225: Tipsoo-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-9	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-42	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	42-57	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	57-73	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	73-110	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0
	110-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0	0
Ipsut-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-8	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	8-18	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	18-30	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	30-40	8.0-17.0	0.0-5.0	5.1-6.0	0	0	0	0
	40-150	---	---	---	---	---	---	---
9250: Burroughs, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-16	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	16-50	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	50-68	11.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	68-80	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	80-150	---	---	---	---	---	---	---
Littletahoma, moist--	0-12	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	12-70	13.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	70-90	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	110-150	4.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
Tatoosh, moist-----	0-6	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	6-22	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	22-46	11.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	46-150	---	---	---	---	---	---	---
9251: Sarvant, moist-----	0-9	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-36	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	36-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	---	---	---	---	---	---	---

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9251:								
Chenuis, moist-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-15	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-30	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	30-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	4.0-13.0	0.0-5.0	4.5-5.5	0	0	0	0
Tatoosh, moist-----	0-6	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	6-22	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	22-46	11.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	46-150	---	---	---	---	---	---	---
9252:								
Littletahoma, moist--	0-12	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	12-70	13.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	70-90	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	110-150	4.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
Burroughs, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-16	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	16-50	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	50-68	11.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	68-80	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	80-150	---	---	---	---	---	---	---
Mountwow, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9253:								
Mountwow, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
Littletahoma, moist--	0-12	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	12-70	13.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	70-90	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	110-150	4.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
Unicornpeak-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-6	---	30.0-40.0	3.5-5.5	0	0	0.0-5.0	0
	6-12	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	12-32	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	32-58	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0.0-5.0	0
	58-72	8.0-16.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	72-88	6.0-14.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
	88-150	4.0-11.0	0.0-5.0	5.1-6.0	0	0	0.0-5.0	0
9254:								
Chenuis, moist-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-15	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-30	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	30-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	4.0-13.0	0.0-5.0	4.5-5.5	0	0	0	0
Sarvant, moist-----	0-9	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-36	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	36-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	---	---	---	---	---	---	---

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9254: Mountnow, moist-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
9255: Burroughs-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-16	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	16-50	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	50-68	11.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	68-80	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	80-150	---	---	---	---	---	---	---
Littletahoma-----	0-12	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	12-70	13.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	70-90	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	110-150	4.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
Tatoosh-----	0-6	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	6-22	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	22-46	11.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	46-150	---	---	---	---	---	---	---
9256: Chenuis-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-15	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-30	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	30-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	4.0-13.0	0.0-5.0	4.5-5.5	0	0	0	0
Sarvant-----	0-9	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-36	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	36-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	---	---	---	---	---	---	---

Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meg/100 g	meg/100 g	pH	Pct	Pct	mmhos/cm	
9257:								
Littletahoma-----	0-12	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	12-70	13.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	70-90	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	110-150	4.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0
Burroughs-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-16	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	16-50	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	50-68	11.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	68-80	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	80-150	---	---	---	---	---	---	---
Mountwow-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
9258:								
Mountwow-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
Littletahoma-----	0-12	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	12-70	13.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	70-90	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	90-110	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	110-150	4.0-12.0	0.0-5.0	4.5-5.5	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9258: Wahpenayo-----	0-16	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	16-45	11.0-17.0	0.0-5.0	5.1-5.5	0	0	0	0
	45-52	11.0-16.0	0.0-5.0	5.1-5.5	0	0	0	0
	52-64	11.0-14.0	0.0-5.0	5.1-5.5	0	0	0	0
	64-75	8.0-12.0	0.0-5.0	5.1-5.5	0	0	0	0
	75-90	6.0-11.0	0.0-5.0	5.1-5.5	0	0	0	0
	90-150	---	---	---	---	---	---	---
9259: Chenuis-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-15	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-30	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	30-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	4.0-13.0	0.0-5.0	4.5-5.5	0	0	0	0
Sarvant-----	0-9	14.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-36	11.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	36-65	8.0-16.0	0.0-5.0	4.5-5.5	0	0	0	0
	65-150	---	---	---	---	---	---	---
Mountwow-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	13.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	8.0-18.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	7.0-17.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	12.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	60-66	6.0-9.0	0.0-5.0	4.5-5.5	0	0	0	0
	66-85	11.0-21.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	120-150	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meg/100 g	meg/100 g	pH	Pct	Pct	mmhos/cm	
9260:								
Mountnow, alpine-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	3.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	3.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	1.0-5.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	2.0-5.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	60-66	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	66-85	8.0-8.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	120-150	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
Chenuis, alpine-----	0-3	---	30.0-40.0	3.5-5.5	0	0	0	0
	3-15	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	15-30	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	30-65	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	65-150	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
Meany-----	0-21	3.0-6.0	0.0-5.0	5.1-5.5	0	0	0	0
	21-72	2.0-6.0	0.0-5.0	5.1-6.0	0	0	0	0
	72-104	2.0-6.0	0.0-5.0	5.1-6.0	0	0	0	0
	104-150	1.0-5.0	0.0-5.0	5.1-6.0	0	0	0	0
9261:								
Wahpenayo, alpine----	0-16	3.0-6.0	0.0-5.0	5.1-5.5	0	0	0	0
	16-45	3.0-6.0	0.0-5.0	5.1-5.5	0	0	0	0
	45-52	2.0-6.0	0.0-5.0	5.1-5.5	0	0	0	0
	52-64	1.0-4.0	0.0-4.0	5.1-5.5	0	0	0	0
	64-75	1.0-4.0	0.0-4.0	5.1-5.5	0	0	0	0
	75-90	1.0-4.0	0.0-4.0	5.1-5.5	0	0	0	0
	90-150	---	---	---	---	---	---	---
Burroughs, alpine----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-16	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	16-50	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	50-68	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	68-80	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	80-150	---	---	---	---	---	---	---

## Soil Survey of Mount Rainier National Park, Washington

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9261: Mountwow, alpine-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	3.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	3.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	1.0-5.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	2.0-5.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	60-66	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	66-85	8.0-8.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	120-150	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
9262: Sarvant, alpine-----	0-9	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	9-36	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	36-65	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	65-150	---	---	---	---	---	---	---
Wahpenayo, alpine-----	0-16	3.0-6.0	0.0-5.0	5.1-5.5	0	0	0	0
	16-45	3.0-6.0	0.0-5.0	5.1-5.5	0	0	0	0
	45-52	2.0-6.0	0.0-5.0	5.1-5.5	0	0	0	0
	52-64	1.0-4.0	0.0-4.0	5.1-5.5	0	0	0	0
	64-75	1.0-4.0	0.0-4.0	5.1-5.5	0	0	0	0
	75-90	1.0-4.0	0.0-4.0	5.1-5.5	0	0	0	0
	90-150	---	---	---	---	---	---	---
Mountwow, alpine-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-10	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	10-14	3.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	14-26	3.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	26-37	1.0-5.0	0.0-5.0	4.5-5.5	0	0	0	0
	37-44	4.0-6.0	0.0-5.0	4.5-5.5	0	0	0	0
	44-51	2.0-5.0	0.0-5.0	4.5-5.5	0	0	0	0
	51-60	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	60-66	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	66-85	8.0-8.0	0.0-5.0	4.5-5.5	0	0	0	0
	85-120	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
	120-150	1.0-4.0	0.0-4.0	4.5-5.5	0	0	0	0
9263: Tamanos-----	0-20	0.0-4.0	---	6.1-7.0	0	0	0	0
	20-50	0.0-4.0	---	6.1-7.0	0	0	0	0
	50-150	---	---	---	---	---	---	---

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	cm	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
9994: Glacierisland-----	0-4	---	30.0-40.0	3.5-5.5	0	0	0	0
	4-14	---	30.0-40.0	3.5-5.5	0	0	0	0
	14-46	0.5-5.0	---	5.1-6.0	0	0	0	0
	46-94	0.5-5.0	---	5.1-6.0	0	0	0	0
	94-150	0.5-5.0	---	5.1-6.0	0	0	0	0
Wonderland-----	0-2	---	30.0-40.0	3.5-5.5	0	0	0	0
	2-5	---	30.0-40.0	3.5-5.5	0	0	0	0
	5-15	0.5-5.0	---	5.1-6.0	0	0	0	0
	15-35	0.5-5.0	---	5.1-6.0	0	0	0	0
	35-60	0.5-5.0	---	5.1-6.0	0	0	0	0
	60-100	0.5-5.0	---	5.1-6.0	0	0	0	0
	100-150	0.5-5.0	---	5.1-6.0	0	0	0	0

Soil Survey of Mount Rainier National Park, Washington

**Table 24.--Total Soil Carbon**

(This table displays soil organic carbon (SOC) and soil inorganic carbon (SIC) in kilograms per square meter to a depth of 2 meters or to the representative top depth of any kind of bedrock or any cemented soil horizon. SOC and SIC are reported on a volumetric whole soil basis, corrected for representative rock fragments indicated in the database. SOC is converted from horizon soil organic matter of the fraction of the soil less than 2 millimeters in diameter. If soil organic matter indicated in the database is NULL, SOC is assumed to be zero. SIC is converted from horizon calcium carbonate content fraction of the soil less than 2 millimeters in diameter. If horizon calcium carbonate indicated in the database is NULL, SIC is assumed to be zero. A weighted average of all horizons is used in the calculations. Only major components of a map unit are displayed in this table.)

Map unit symbol and component name and component percent	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
6100:		
Riverwash (80 percent)-----	0	0
Comet (15 percent)-----	9	0
6101:		
Comet (50 percent)-----	9	0
Carbon (35 percent)-----	11	0
6110:		
Tokaloo (55 percent)-----	17	0
Kautz (25 percent)-----	22	0
Sunbeam (20 percent)-----	33	0
6120:		
Kautz (45 percent)-----	22	0
Tokaloo (35 percent)-----	17	0
Sunbeam (15 percent)-----	33	0
6125:		
Tokaloo (35 percent)-----	17	0
Kautz (30 percent)-----	22	0
Goldenlakes (20 percent)-----	16	0
7100:		
Goldenlakes (50 percent)-----	16	0
Ingraham (30 percent)-----	7	0
Kautz (15 percent)-----	22	0
7110:		
Kautz (40 percent)-----	22	0
Goldenlakes (35 percent)-----	16	0

Soil Survey of Mount Rainier National Park, Washington

Table 24.--Total Soil Carbon--Continued

Map unit symbol and component name and component percent	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
7120:		
Kautz (50 percent)-----	22	0
Tokaloo (25 percent)-----	17	0
Goldenlakes (15 percent)-----	16	0
7125:		
Goldenlakes (40 percent)-----	16	0
Kautz (30 percent)-----	22	0
Ingraham (15 percent)-----	7	0
8100:		
Riverwash (60 percent)-----	0	0
Flett (25 percent)-----	5	0
8101:		
Flett (50 percent)-----	5	0
Narada (35 percent)-----	6	0
8110:		
Vantrump (40 percent)-----	19	0
Laughingwater (30 percent)-----	25	0
Longmire (15 percent)-----	16	0
8120:		
Longmire (35 percent)-----	16	0
Laughingwater (30 percent)-----	25	0
Vantrump (20 percent)-----	19	0
8125:		
Vantrump (35 percent)-----	19	0
Laughingwater (25 percent)-----	25	0
Longmire (20 percent)-----	16	0
8130:		
Summerland (70 percent)-----	22	0
Longmire (15 percent)-----	16	0
8150:		
Ghost, warm (45 percent)-----	49	0
Frogheaven (30 percent)-----	33	0
8200:		
Riverwash (80 percent)-----	0	0
Flett, cold (15 percent)-----	5	0

Soil Survey of Mount Rainier National Park, Washington

Table 24.--Total Soil Carbon--Continued

Map unit symbol and component name and component percent	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
8201:		
Mysticlake (50 percent)-----	57	0
Unicornpeak (25 percent)-----	52	0
Williwakas (15 percent)-----	44	0
8203:		
Glacierisland (55 percent)-----	14	0
Sheepskull (20 percent)-----	3	0
Sluiskin (15 percent)-----	2	0
8210:		
Mysticlake (45 percent)-----	57	0
Unicornpeak (30 percent)-----	52	0
Tipsoo (15 percent)-----	62	0
8211:		
Owyhigh (50 percent)-----	38	0
Mysticlake (25 percent)-----	57	0
Williwakas (15 percent)-----	44	0
8220:		
Tipsoo (35 percent)-----	62	0
Unicornpeak (30 percent)-----	52	0
Mysticlake (20 percent)-----	57	0
8225:		
Mysticlake (35 percent)-----	57	0
Unicornpeak (25 percent)-----	52	0
Tipsoo (20 percent)-----	62	0
8230:		
Summerland, cold (70 percent)-----	22	0
Tipsoo (15 percent)-----	62	0
8250:		
Ghost (35 percent)-----	49	0
Williwakas (30 percent)-----	44	0
Mountwow, moist (20 percent)-----	37	0
8251:		
Mountwow, moist (50 percent)-----	37	0
Williwakas (25 percent)-----	44	0
Unicornpeak (15 percent)-----	52	0

Soil Survey of Mount Rainier National Park, Washington

Table 24.--Total Soil Carbon--Continued

Map unit symbol and component name and component percent	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
8252:		
Mountwow, moist (45 percent)-----	37	0
Unicornpeak (20 percent)-----	52	0
Williwakas (15 percent)-----	44	0
8255:		
Ghost (35 percent)-----	49	0
Williwakas (30 percent)-----	44	0
Mountwow (20 percent)-----	37	0
8256:		
Mountwow (50 percent)-----	37	0
Williwakas (20 percent)-----	44	0
Unicornpeak (15 percent)-----	52	0
8257:		
Wahpenayo (40 percent)-----	37	0
Mountwow (25 percent)-----	37	0
Williwakas (15 percent)-----	44	0
9100:		
Arahustan (50 percent)-----	15	0
Ohanapecosh (25 percent)-----	10	0
Longmire (15 percent)-----	16	0
9101:		
Ohanapecosh (50 percent)-----	10	0
Arahustan (25 percent)-----	15	0
Summerland (15 percent)-----	22	0
9110:		
Longmire (45 percent)-----	16	0
Arahustan (35 percent)-----	15	0
9120:		
Longmire (45 percent)-----	16	0
Arahustan (25 percent)-----	15	0
Vantrump (20 percent)-----	19	0
9125:		
Longmire (40 percent)-----	16	0
Arahustan (25 percent)-----	15	0
Ohanapecosh (15 percent)-----	10	0

Soil Survey of Mount Rainier National Park, Washington

Table 24.--Total Soil Carbon--Continued

Map unit symbol and component name and component percent	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
9200:		
Owyhigh (50 percent)-----	38	0
Ipsut (25 percent)-----	21	0
Tipsoo (15 percent)-----	62	0
9201:		
Sluiskin (40 percent)-----	2	0
Owyhigh (25 percent)-----	38	0
Summerland, cold (15 percent)-----	22	0
9210:		
Tipsoo (45 percent)-----	62	0
Owyhigh (35 percent)-----	38	0
9220:		
Tipsoo (45 percent)-----	62	0
Owyhigh (25 percent)-----	38	0
Mysticlake (20 percent)-----	57	0
9225:		
Owyhigh (40 percent)-----	38	0
Tipsoo (25 percent)-----	62	0
Ipsut (15 percent)-----	21	0
9250:		
Burroughs, moist (45 percent)-----	32	0
Littletahoma, moist (20 percent)-----	57	0
Tatoosh, moist (20 percent)-----	19	0
9251:		
Sarvant, moist (45 percent)-----	19	0
Chenuis, moist (25 percent)-----	39	0
Tatoosh, moist (20 percent)-----	19	0
9252:		
Littletahoma, moist (40 percent)-----	57	0
Burroughs, moist (25 percent)-----	32	0
Mountwow, moist (15 percent)-----	37	0
9253:		
Mountwow, moist (40 percent)-----	37	0
Littletahoma, moist (30 percent)-----	57	0
Unicornpeak (15 percent)-----	52	0

Soil Survey of Mount Rainier National Park, Washington

Table 24.--Total Soil Carbon--Continued

Map unit symbol and component name and component percent	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
9254:		
Chenuis, moist (40 percent)-----	39	0
Sarvant, moist (25 percent)-----	19	0
Mountwow, moist (15 percent)-----	37	0
9255:		
Burroughs (50 percent)-----	32	0
Littletahoma (20 percent)-----	57	0
Tatoosh (15 percent)-----	19	0
9256:		
Chenuis (50 percent)-----	39	0
Sarvant (30 percent)-----	19	0
9257:		
Littletahoma (50 percent)-----	57	0
Burroughs (20 percent)-----	32	0
Mountwow (15 percent)-----	37	0
9258:		
Mountwow (35 percent)-----	37	0
Littletahoma (25 percent)-----	57	0
Wahpenayo (15 percent)-----	37	0
9259:		
Chenuis (40 percent)-----	39	0
Sarvant (25 percent)-----	19	0
Mountwow (15 percent)-----	37	0
9260:		
Mountwow, alpine (45 percent)-----	10	0
Chenuis, alpine (20 percent)-----	5	0
Meany (15 percent)-----	3	0
9261:		
Wahpenayo, alpine (45 percent)-----	4	0
Burroughs, alpine (20 percent)-----	6	0
Mountwow, alpine (15 percent)-----	10	0
9262:		
Sarvant, alpine (40 percent)-----	3	0
Wahpenayo, alpine (25 percent)-----	4	0
Mountwow, alpine (15 percent)-----	10	0

Soil Survey of Mount Rainier National Park, Washington

Table 24.--Total Soil Carbon--Continued

Map unit symbol and component name and component percent	SOC	SIC
	kg/m <sup>2</sup>	kg/m <sup>2</sup>
9263: Tamanos (80 percent)-----	1	0
Glaciers (20 percent)-----	0	0
9993: Rubbleland, talus (50 percent)-----	0	0
Rock outcrop (35 percent)-----	0	0
9994: Rubbleland, till (50 percent)-----	0	0
Glacierisland (25 percent)-----	14	0
Wonderland (15 percent)-----	7	0
9996: Glaciers (45 percent)-----	0	0
Rock outcrop (45 percent)-----	0	0
W: Water (100 percent)-----	0	0

Table 25.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated. Depth to water table is based on a representative value.)

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding		Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
6100: Riverwash-----	---	January	30	>200	---	---	None	---	---
		February	30	>200	---	---	None	---	---
		March	30	>200	---	---	None	---	---
		April	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		May	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		June	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		July	30	>200	---	---	None	---	---
		August	30	>200	---	---	None	---	---
		September	30	>200	---	---	None	---	---
		October	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		November	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		December	30	>200	---	---	None	---	---
Comet-----	A	April	---	---	---	---	None	---	Rare
		May	---	---	---	---	None	---	Rare
		October	---	---	---	---	None	---	Rare
		November	---	---	---	---	None	---	Rare
Water-----	---	---	---	---	---	---	---	---	---
6101: Comet-----	A	April	---	---	---	---	None	---	Rare
		May	---	---	---	---	None	---	Rare
		October	---	---	---	---	None	---	Rare
		November	---	---	---	---	None	---	Rare

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
6101: Carbon-----	A/D		cm	cm	cm					
		January	110	>200	---	---	None	---	---	---
		February	100	>200	---	---	None	---	---	---
		March	90	>200	---	---	None	---	---	Rare
		April	55	>200	---	---	None	---	---	Rare
		May	55	>200	---	---	None	---	---	---
		June	140	>200	---	---	None	---	---	---
		July	170	>200	---	---	None	---	---	---
		August	180	>200	---	---	None	---	---	---
		September	180	>200	---	---	None	---	---	---
		October	170	>200	---	---	None	---	---	Rare
		November	150	>200	---	---	None	---	---	Rare
		December	125	>200	---	---	None	---	---	---
Sunbeam-----	A/D	January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
6101: Riverwash-----	---	January	30	>200	---	---	None	---	---
		February	30	>200	---	---	None	---	---
		March	30	>200	---	---	None	---	---
		April	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		May	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		June	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		July	30	>200	---	---	None	---	---
		August	30	>200	---	---	None	---	---
		September	30	>200	---	---	None	---	---
		October	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		November	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		December	30	>200	---	---	None	---	---
6110: Tokaloo-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Kautz-----	A	---	---	---	---	---	---	---	---

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
6110: Sunbeam-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
6120: Kautz-----	A		---	---	---	---	---	---	---	---
			---	---	---	---	---	---	---	---
Tokaloo-----	A/D		---	---	---	---	---	---	---	---
		January	100	>200	---	---	---	None	---	None
		February	70	>200	---	---	---	None	---	None
		March	30	>200	---	---	---	None	---	None
		April	10	>200	---	---	---	None	---	None
		May	30	>200	---	---	---	None	---	None
		June	30	>200	---	---	---	None	---	None
		July	50	>200	---	---	---	None	---	None
		August	130	>200	---	---	---	None	---	None
		September	180	>200	---	---	---	None	---	None
		October	180	>200	---	---	---	None	---	None
		November	140	>200	---	---	---	None	---	None
		December	120	>200	---	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
6120: Sunbeam-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
Goldenlakes-----	A	---	---	---	---	---	---	---	---
		---	---	---	---	---	---	---	---
6125: Tokaloo-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Kautz-----	A	---	---	---	---	---	---	---	---
Goldenlakes-----	A	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
6125: Sunbeam-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
Ingraham-----	D	---	---	---	---	---	---	---	---	---
7100: Goldenlakes-----	A	---	---	---	---	---	---	---	---	---
Ingraham-----	D	---	---	---	---	---	---	---	---	---
Kautz-----	A	---	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---	---
7110: Kautz-----	A	---	---	---	---	---	---	---	---	---
Goldenlakes-----	A	---	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
7110: Tokaloo-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Ingraham-----	D	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---
Sunbeam-----	A/D	January	0	>200	---				
		February	0	>200	---				
		March	0	>200	---				
		April	0	>200	1-5	Long (7 to 30 days)	Frequent		
		May	0	>200	1-5	Long (7 to 30 days)	Frequent		
		June	5	>200	0-2	Long (7 to 30 days)	Frequent		
		July	10	>200	---				
		August	20	>200	---				
		September	30	>200	---				
		October	20	>200	---				
		November	10	>200	---				
		December	0	>200	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
7120: Kautz-----	A		cm	cm	cm				
Kautz-----	A	---	---	---	---	---	---	---	---
Tokaloo-----	A/D	January	100	>200	---				
		February	75	>200	---				
		March	50	>200	---				
		April	25	>200	---				
		May	40	>200	---				
		June	75	>200	---				
		July	125	>200	---				
		August	150	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Goldenlakes-----	A	---	---	---	---	---	---	---	---
Ingraham-----	D	---	---	---	---	---	---	---	---
Sunbeam-----	A/D	January	0	>200	---				
		February	0	>200	---				
		March	0	>200	---				
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---				
		August	20	>200	---				
		September	30	>200	---				
		October	20	>200	---				
		November	10	>200	---				
		December	0	>200	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
7125: Goldenlakes-----	A	---	cm	cm	cm	---	---	---	---	
Kautz-----	A	---	---	---	---	---	---	---	---	
Ingraham-----	D	---	---	---	---	---	---	---	---	
Tokaloo-----	A/D	January February March April May June July August September October November December	100 70 30 10 30 30 50 130 180 180 140 120	>200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None None None None	---	None None None None None None None None None None None None
Sunbeam-----	A/D	January February March April  May  June  July August September October November December	0 0 0 0  0  5 10 20 30 20 10 0	>200 >200 >200 >200  >200  >200 >200 >200 >200 >200 >200 >200	---	---	Long (7 to 30 days) Long (7 to 30 days) Long (7 to 30 days)	Frequent Frequent Frequent	---	None None None None  None  None None None None None None None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8100: Riverwash-----	---		cm	cm	cm				
		January	30	>200	---	---	None	---	---
		February	30	>200	---	---	None	---	---
		March	30	>200	---	---	None	---	---
		April	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		May	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		June	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		July	30	>200	---	---	None	---	---
		August	30	>200	---	---	None	---	---
		September	30	>200	---	---	None	---	---
		October	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		November	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		December	30	>200	---	---	None	---	---
Flett-----	A	April	---	---	---	---	None	---	Rare
		May	---	---	---	---	None	---	Rare
		October	---	---	---	---	None	---	Rare
		November	---	---	---	---	None	---	Rare
Narada-----	A	January	110	>200	---	---	None	---	---
		February	100	>200	---	---	None	---	---
		March	90	>200	---	---	None	---	---
		April	65	>200	---	---	None	---	Rare
		May	65	>200	---	---	None	---	Rare
		June	140	>200	---	---	None	---	---
		July	170	>200	---	---	None	---	---
		August	180	>200	---	---	None	---	---
		September	180	>200	---	---	None	---	---
		October	170	>200	---	---	None	---	Rare
		November	150	>200	---	---	None	---	Rare
		December	125	>200	---	---	None	---	---
Water-----	---		---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8101: Flett-----	A		cm	cm	cm				
		April	---	---	---	---	None	---	Rare
		May	---	---	---	---	None	---	Rare
		October	---	---	---	---	None	---	Rare
		November	---	---	---	---	None	---	Rare
Narada-----	A	January	110	>200	---	---	None	---	---
		February	100	>200	---	---	None	---	---
		March	90	>200	---	---	None	---	---
		April	65	>200	---	---	None	---	Rare
		May	65	>200	---	---	None	---	Rare
		June	140	>200	---	---	None	---	---
		July	170	>200	---	---	None	---	---
		August	180	>200	---	---	None	---	---
		September	180	>200	---	---	None	---	---
		October	170	>200	---	---	None	---	Rare
		November	150	>200	---	---	None	---	Rare
		December	125	>200	---	---	None	---	---
Frogheaven-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8101: Riverwash-----	---	January	30	>200	---	---	None	---	---	---
		February	30	>200	---	---	None	---	---	---
		March	30	>200	---	---	None	---	---	---
		April	30	>200	---	---	None	Brief (2 to 7 days)	Frequent	
		May	30	>200	---	---	None	Brief (2 to 7 days)	Frequent	
		June	30	>200	---	---	None	Brief (2 to 7 days)	Frequent	
		July	30	>200	---	---	None	---	---	
		August	30	>200	---	---	None	---	---	
		September	30	>200	---	---	None	---	---	
		October	30	>200	---	---	None	Brief (2 to 7 days)	Frequent	
		November	30	>200	---	---	None	Brief (2 to 7 days)	Frequent	
		December	30	>200	---	---	None	---	---	
8110: Vantrump-----	A/D	January	100	>200	---	---	None	---	None	
		February	70	>200	---	---	None	---	None	
		March	30	>200	---	---	None	---	None	
		April	10	>200	---	---	None	---	None	
		May	30	>200	---	---	None	---	None	
		June	30	>200	---	---	None	---	None	
		July	50	>200	---	---	None	---	None	
		August	130	>200	---	---	None	---	None	
		September	180	>200	---	---	None	---	None	
		October	180	>200	---	---	None	---	None	
		November	140	>200	---	---	None	---	None	
		December	120	>200	---	---	None	---	None	

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8110: Laughingwater-----	A/D		cm	cm	cm				
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
Longmire-----	A		---	---	---	---	---	---	---
									---
Frogheaven-----	A/D		0	>200	---				
		January	0	>200	---				
		February	0	>200	---				
		March	0	>200	---				
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8110: Ghost, warm-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		June	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		July	0	>200	---	---	---	---	---	None
		August	5	>200	---	---	---	---	---	None
		September	5	>200	---	---	---	---	---	None
		October	0	>200	---	---	---	---	---	None
		November	0	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
8120: Longmire-----	A	---	---	---	---	---	---	---	---	---
Laughingwater-----	A/D									
		January	110	>200	---	---	None	---	---	None
		February	100	>200	---	---	None	---	---	None
		March	75	>200	---	---	None	---	---	None
		April	50	>200	---	---	None	---	---	None
		May	60	>200	---	---	None	---	---	None
		June	60	>200	---	---	None	---	---	None
		July	80	>200	---	---	None	---	---	None
		August	150	>200	---	---	None	---	---	None
		November	150	>200	---	---	None	---	---	None
		December	130	>200	---	---	None	---	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8120: Vantrump-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Frogheaven-----	A/D		cm	cm	cm				
		January	0	>200	---				
		February	0	>200	---				
		March	0	>200	---				
		April	0	>200	1-5	Long (7 to 30 days)	Frequent		
		May	0	>200	1-5	Long (7 to 30 days)	Frequent		
		June	5	>200	0-2	Long (7 to 30 days)	Frequent		
		July	10	>200	---				
		August	20	>200	---				
		September	30	>200	---				
		October	20	>200	---				
		November	10	>200	---				
		December	0	>200	---				
Arahustan-----	A		---	---	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8125: Vantrump-----	A/D		cm	cm	cm				
		January	100	>200	---	---	None	---	None
		February	75	>200	---	---	None	---	None
		March	50	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	40	>200	---	---	None	---	None
		June	75	>200	---	---	None	---	None
		July	125	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Laughingwater-----	A/D		cm	cm	cm				
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
			cm	cm	cm				
Longmire-----	A		---	---	---	---	---	---	---
			---	---	---	---	---	---	---
Arahustan-----	A		---	---	---	---	---	---	---
			---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8125: Frogheaven-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
Ohanapecosh-----	D	---	---	---	---	---	---	---	---
8130: Summerland-----	A	---	---	---	---	---	---	---	---
Longmire-----	A	---	---	---	---	---	---	---	---
Vantrump-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8130: Frogheaven-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
8150: Ghost, warm-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		June	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		July	0	>200	---	---	---	---	---	None
		August	5	>200	---	---	---	---	---	None
		September	5	>200	---	---	---	---	---	None
		October	0	>200	---	---	---	---	---	None
		November	0	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8150: Frogheaven-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
Laughingwater-----	A/D	January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8150: Vantrump-----	A/D		cm	cm	cm				
			January	100	>200	---	---	None	---
			February	70	>200	---	---	None	---
			March	30	>200	---	---	None	---
			April	10	>200	---	---	None	---
			May	30	>200	---	---	None	---
			June	30	>200	---	---	None	---
			July	50	>200	---	---	None	---
			August	130	>200	---	---	None	---
			September	180	>200	---	---	None	---
			October	180	>200	---	---	None	---
			November	140	>200	---	---	None	---
			December	120	>200	---	---	None	---
Water-----	---	---	---	---	---	---	---	---	---
8200: Riverwash-----			January	30	>200	---	---	None	---
			February	30	>200	---	---	None	---
			March	30	>200	---	---	None	---
			April	30	>200	---	---	None	Brief (2 to 7 days)
			May	30	>200	---	---	None	Brief (2 to 7 days)
			June	30	>200	---	---	None	Brief (2 to 7 days)
			July	30	>200	---	---	None	---
			August	30	>200	---	---	None	---
			September	30	>200	---	---	None	---
			October	30	>200	---	---	None	Brief (2 to 7 days)
			November	30	>200	---	---	None	Brief (2 to 7 days)
			December	30	>200	---	---	None	---
Flett, cold-----	A	April	---	---	---	---	---	None	---
		May	---	---	---	---	---	None	---
		October	---	---	---	---	---	None	---
		November	---	---	---	---	---	None	---

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8200: Water-----	---	---	cm	cm	cm	---	---	---	---
8201: Mysticlake-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Unicornpeak-----	A/D	January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8201: Williwakas-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
Ghost-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		June	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		July	0	>200	---	---	---	---	---	None
		August	5	>200	---	---	---	---	---	None
		September	5	>200	---	---	---	---	---	None
		October	0	>200	---	---	---	---	---	None
		November	0	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
Owyhigh-----	A		---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8203: Glacierisland-----	A	---	cm	cm	cm	---	---	---	---	
Sheepskull-----	A	---	---	---	---	---	---	---	---	
Sluiskin-----	D	---	---	---	---	---	---	---	---	
Wonderland-----	A/D	January February March April May June July August September October November December	100 70 30 10 30 30 50 130 180 180 140 120	>200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None None None None	---	None None None None None None None None None None None None
8210: Mysticlake-----	A/D	January February March April May June July August September October November December	100 70 30 10 30 30 50 130 180 180 140 120	>200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None None None None	---	None None None None None None None None None None None None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8210: Unicornpeak-----	A/D		cm	cm	cm				
		January	110	>200	---				
		February	100	>200	---				
		March	75	>200	---				
		April	50	>200	---				
		May	60	>200	---				
		June	60	>200	---				
		July	80	>200	---				
		August	150	>200	---				
		November	150	>200	---				
		December	130	>200	---				
Tipsoo-----	A	---	---	---	---	---	---	---	---
Ghost-----	A/D								
		January	0	>200	---				
		February	0	>200	---				
		March	0	>200	---				
		April	0	>200	1-10	Long (7 to 30 days)	Frequent		
		May	0	>200	1-10	Long (7 to 30 days)	Frequent		
		June	0	>200	1-5	Long (7 to 30 days)	Frequent		
		July	0	>200	---				
		August	5	>200	---				
		September	5	>200	---				
		October	0	>200	---				
		November	0	>200	---				
		December	0	>200	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8211: Owyhigh-----	A	---	cm	cm	cm	---	---	---	---
Mysticlake-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Williwakas-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None

## Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8211: Ipsut-----	D		cm	cm	cm				
		---	---	---	---	---	---	---	---
Mountwow-----	A/D	January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
8220: Tipsoo-----	A	---	---	---	---				
Unicornpeak-----	A/D	January	110	>200	---				
		February	100	>200	---				
		March	75	>200	---				
		April	50	>200	---				
		May	60	>200	---				
		June	60	>200	---				
		July	80	>200	---				
		August	150	>200	---				
		November	150	>200	---				
		December	130	>200	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8220: Mysticlake-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	25	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Williwakas-----	A/D		cm	cm	cm				
		January	0	>200	---				
		February	0	>200	---				
		March	0	>200	---				
		April	0	>200	1-5	Long (7 to 30 days)	Frequent		
		May	0	>200	1-5	Long (7 to 30 days)	Frequent		
		June	5	>200	0-2	Long (7 to 30 days)	Frequent		
		July	10	>200	---				
		August	20	>200	---				
		September	30	>200	---				
		October	20	>200	---				
		November	10	>200	---				
		December	0	>200	---				
Owyhigh-----	A		---	---	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8225: Mysticlake-----	A/D		cm	cm	cm				
			January	100	>200	---	---	---	None
			February	70	>200	---	---	---	None
			March	30	>200	---	---	---	None
			April	25	>200	---	---	---	None
			May	30	>200	---	---	---	None
			June	30	>200	---	---	---	None
			July	50	>200	---	---	---	None
			August	130	>200	---	---	---	None
			September	180	>200	---	---	---	None
			October	180	>200	---	---	---	None
			November	140	>200	---	---	---	None
			December	120	>200	---	---	---	None
Unicornpeak-----	A/D		cm	cm	cm				
			January	110	>200	---	---	---	None
			February	100	>200	---	---	---	None
			March	75	>200	---	---	---	None
			April	50	>200	---	---	---	None
			May	60	>200	---	---	---	None
			June	60	>200	---	---	---	None
			July	80	>200	---	---	---	None
			August	150	>200	---	---	---	None
			November	150	>200	---	---	---	None
			December	130	>200	---	---	---	None
			cm	cm	cm				
Tipsoo-----	A		---	---	---	---	---	---	---
			---	---	---	---	---	---	---
Owyhigh-----	A		---	---	---	---	---	---	---
			---	---	---	---	---	---	---
Ipsut-----	D		---	---	---	---	---	---	---
			---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8225: Williwakas-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
8230: Summerland, cold-----	A	---	---	---	---	---	---	---	---
		---	---	---	---	---	---	---	---
Tipsoo-----	A	---	---	---	---	---	---	---	---
Wonderland-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Glacierisland-----	A	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8250: Ghost-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		June	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		July	0	>200	---	---	---	---	---	None
		August	5	>200	---	---	---	---	---	None
		September	5	>200	---	---	---	---	---	None
		October	0	>200	---	---	---	---	---	None
		November	0	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
Williwakas-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8250: Mountwow, moist-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Unicornpeak-----	A/D		cm	cm	cm				
		January	110	>200	---				
		February	100	>200	---				
		March	75	>200	---				
		April	50	>200	---				
		May	60	>200	---				
		June	60	>200	---				
		July	80	>200	---				
		August	150	>200	---				
		November	150	>200	---				
		December	130	>200	---				
			cm	cm	cm				
Water-----	---		cm	cm	cm				
			---	---	---				
8251: Mountwow, moist-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8251: Williwakas-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
Unicornpeak-----	A/D									
		January	110	>200	---	---	None	---	---	None
		February	100	>200	---	---	None	---	---	None
		March	75	>200	---	---	None	---	---	None
		April	50	>200	---	---	None	---	---	None
		May	60	>200	---	---	None	---	---	None
		June	60	>200	---	---	None	---	---	None
		July	80	>200	---	---	None	---	---	None
		August	150	>200	---	---	None	---	---	None
		November	150	>200	---	---	None	---	---	None
		December	130	>200	---	---	None	---	---	None

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8251: Ghost-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-10	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-10	Long (7 to 30 days)	Frequent	---	None
		June	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		July	0	>200	---	---	---	---	None
		August	5	>200	---	---	---	---	None
		September	5	>200	---	---	---	---	None
		October	0	>200	---	---	---	---	None
		November	0	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
8252: Mountwow, moist-----	A/D	January	100	>200	---	---	None	---	None
		February	75	>200	---	---	None	---	None
		March	50	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	40	>200	---	---	None	---	None
		June	75	>200	---	---	None	---	None
		July	125	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8252: Unicornpeak-----	A/D		cm	cm	cm					
		January	110	>200	---					
		February	100	>200	---					
		March	75	>200	---					
		April	50	>200	---					
		May	60	>200	---					
		June	60	>200	---					
		July	80	>200	---					
		August	150	>200	---					
		November	150	>200	---					
		December	130	>200	---					
Williwakas-----	A/D	January	0	>200	---					
		February	0	>200	---					
		March	0	>200	---					
		April	0	>200	1-5	Long (7 to 30 days)	Frequent			
		May	0	>200	1-5	Long (7 to 30 days)	Frequent			
		June	5	>200	0-2	Long (7 to 30 days)	Frequent			
		July	10	>200	---					
		August	20	>200	---					
		September	30	>200	---					
		October	20	>200	---					
		November	10	>200	---					
		December	0	>200	---					
Owyhigh-----	A	---	---	---	---					
Rock outcrop-----	-	---	---	---	---					

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8255: Ghost-----	A/D		cm	cm	cm				
		January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-10	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-10	Long (7 to 30 days)	Frequent	---	None
		June	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		July	0	>200	---	---	---	---	None
		August	5	>200	---	---	---	---	None
		September	5	>200	---	---	---	---	None
		October	0	>200	---	---	---	---	None
		November	0	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
Williwakas-----	A/D		cm	cm	cm				
		January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8255: Mount-wow-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Unicornpeak-----	A/D	January	110	>200	---				
		February	100	>200	---				
		March	75	>200	---				
		April	50	>200	---				
		May	60	>200	---				
		June	60	>200	---				
		July	80	>200	---				
		August	150	>200	---				
		November	150	>200	---				
		December	130	>200	---				
Water-----	---	---	---	---	---	---	---	---	---
8256: Mount-wow-----	A/D	January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8256: Williwakas-----	A/D		cm	cm	cm				
		January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
Unicornpeak-----	A/D								
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
Wahpenayo-----	B/D								
		January	55	>200	---	---	None	---	None
		February	50	>200	---	---	None	---	None
		March	40	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	45	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		November	80	>200	---	---	None	---	None
		December	60	>200	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
8256: Ghost-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-10	Long (7 to 30 days)	Frequent	---	---	None
		June	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		July	0	>200	---	---	---	---	---	None
		August	5	>200	---	---	---	---	---	None
		September	5	>200	---	---	---	---	---	None
		October	0	>200	---	---	---	---	---	None
		November	0	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
8257: Wahpenayo-----	B/D									
		January	55	>200	---	---	None	---	---	None
		February	50	>200	---	---	None	---	---	None
		March	40	>200	---	---	None	---	---	None
		April	25	>200	---	---	None	---	---	None
		May	30	>200	---	---	None	---	---	None
		June	45	>200	---	---	None	---	---	None
		July	80	>200	---	---	None	---	---	None
		November	80	>200	---	---	None	---	---	None
		December	60	>200	---	---	None	---	---	None

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8257: Mountwow-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	75	>200	---				
		March	50	>200	---				
		April	25	>200	---				
		May	40	>200	---				
		June	75	>200	---				
		July	125	>200	---				
		August	150	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Williwakas-----	A/D		cm	cm	cm				
		January	0	>200	---				
		February	0	>200	---				
		March	0	>200	---				
		April	0	>200	1-5	Long (7 to 30 days)	Frequent		
		May	0	>200	1-5	Long (7 to 30 days)	Frequent		
		June	5	>200	0-2	Long (7 to 30 days)	Frequent		
		July	10	>200	---				
		August	20	>200	---				
		September	30	>200	---				
		October	20	>200	---				
		November	10	>200	---				
		December	0	>200	---				
Owyhigh-----	A		---	---	---				

Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
8257: Unicornpeak-----	A/D		cm	cm	cm				
		January	110	>200	---				
		February	100	>200	---				
		March	75	>200	---				
		April	50	>200	---				
		May	60	>200	---				
		June	60	>200	---				
		July	80	>200	---				
		August	150	>200	---				
		November	150	>200	---				
		December	130	>200	---				
9100: Arahustan-----	A		---	---	---				
			---	---	---				
Ohanapecosh-----	D		---	---	---				
Longmire-----	A		---	---	---				
Rock outcrop-----	---		---	---	---				
Vantrump-----	A/D		---	---	---				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
9101: Ohanapecosh-----	D		---	---	---				
			---	---	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9101: Arahustan-----	A	---	cm	cm	cm	---	---	---	---
Summerland-----	A	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---
Rubbleland, talus-----	---	---	---	---	---	---	---	---	---
9110: Longmire-----	A	---	---	---	---	---	---	---	---
Arahustan-----	A	---	---	---	---	---	---	---	---
Frogheaven-----	A/D	January February March April	0 0 0 0	>200 >200 >200 >200	---	---	---	---	None None None None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July August September October November December	10 20 30 20 10 0	>200 >200 >200 >200 >200 >200	---	---	---	---	None None None None None None
Ohanapecosh-----	D	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9110: Vantrump-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
9120: Longmire-----	A	---	---	---	---	---	---	---	---
		---	---	---	---	---	---	---	---
Arahustan-----	A	---	---	---	---	---	---	---	---
Vantrump-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	10	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9120: Frogheaven-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
Ohanapecosh-----	D	---	---	---	---	---	---	---	---
9125: Longmire-----	A	---	---	---	---	---	---	---	---
Arahustan-----	A	---	---	---	---	---	---	---	---
Ohanapecosh-----	D	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
9125: Vantrump-----	A/D		cm	cm	cm					
		January	100	>200	---					
		February	70	>200	---					
		March	30	>200	---					
		April	10	>200	---					
		May	30	>200	---					
		June	30	>200	---					
		July	50	>200	---					
		August	130	>200	---					
		September	180	>200	---					
		October	180	>200	---					
		November	140	>200	---					
		December	120	>200	---					
Frogheaven-----	A/D	January	0	>200	---					
		February	0	>200	---					
		March	0	>200	---					
		April	0	>200	1-5	Long (7 to 30 days)	Frequent			
		May	0	>200	1-5	Long (7 to 30 days)	Frequent			
		June	5	>200	0-2	Long (7 to 30 days)	Frequent			
		July	10	>200	---					
		August	20	>200	---					
		September	30	>200	---					
		October	20	>200	---					
		November	10	>200	---					
		December	0	>200	---					

## Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9125: Laughingwater-----	A/D		cm	cm	cm				
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
9200: Owyhigh-----	A	---	---	---	---	---	---	---	---
Ipsut-----	D	---	---	---	---	---	---	---	---
Tipsoo-----	A	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---
Unicornpeak-----	A/D		cm	cm	cm				
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
9201: Sluiskin-----	D	---	---	---	---	---	---	---	---
Owyhigh-----	A	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9201: Summerland, cold-----	A		cm	cm	cm				
Rock outcrop-----		---	---	---	---	---	---	---	---
Rubbleland, talus-----		---	---	---	---	---	---	---	---
9210: Tipsoo-----	A	---	---	---	---	---	---	---	---
Owyhigh-----	A	---	---	---	---	---	---	---	---
Ipsut-----	D	---	---	---	---	---	---	---	---
Mysticlake-----	A/D	January February March April May June July August September October November December	100 70 30 10 30 30 50 130 180 180 140 120	>200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None None None None	None None None None None None None None None None None None
Rock outcrop-----		---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9210: Williwakas-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
9220: Tipsoo-----	A	---	---	---	---	---	---	---	---
		---	---	---	---	---	---	---	---
Owyhigh-----	A	---	---	---	---	---	---	---	---
Mysticlake-----	A/D	January	100	>200	---	---	None	---	None
		February	70	>200	---	---	None	---	None
		March	30	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	30	>200	---	---	None	---	None
		July	50	>200	---	---	None	---	None
		August	130	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Ipsut-----	D	---	---	---	---	---	---	---	---

## Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
9220: Williwakas-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---		
		February	0	>200	---	---	---	---		
		March	0	>200	---	---	---	---		
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---		
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---		
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---		
		July	10	>200	---	---	---	---		
		August	20	>200	---	---	---	---		
		September	30	>200	---	---	---	---		
		October	20	>200	---	---	---	---		
		November	10	>200	---	---	---	---		
		December	0	>200	---	---	---	---		
9225: Owyhigh-----	A		---	---	---	---	---	---		
			---	---	---	---	---	---		
Tipsoo-----	A		---	---	---	---	---	---		
Ipsut-----	D		---	---	---	---	---	---		
Mysticlake-----	A/D		---	---	---	---	---	---		
		January	100	>200	---	---	---	None		
		February	70	>200	---	---	---	None		
		March	30	>200	---	---	---	None		
		April	10	>200	---	---	---	None		
		May	30	>200	---	---	---	None		
		June	30	>200	---	---	---	None		
		July	50	>200	---	---	---	None		
		August	130	>200	---	---	---	None		
		September	180	>200	---	---	---	None		
		October	180	>200	---	---	---	None		
		November	140	>200	---	---	---	None		
		December	120	>200	---	---	---	None		

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9225: Unicornpeak-----	A/D		cm	cm	cm				
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
Williwakas-----	A/D		cm	cm	cm				
		January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
9250: Burroughs, moist-----	A	---	---	---	---	---	---	---	---
Littletahoma, moist-----	A	---	---	---	---	---	---	---	---
Tatoosh, moist-----	D	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9250: Mountwow, moist-----	A/D		cm	cm	cm				
		January	100	>200	---				
		February	70	>200	---				
		March	30	>200	---				
		April	10	>200	---				
		May	30	>200	---				
		June	30	>200	---				
		July	50	>200	---				
		August	130	>200	---				
		September	180	>200	---				
		October	180	>200	---				
		November	140	>200	---				
		December	120	>200	---				
Rock outcrop-----	---		---	---	---				
9251: Sarvant, moist-----	A		---	---	---				
Chenuis, moist-----	A		---	---	---				
Tatoosh, moist-----	D		---	---	---				
Rock outcrop-----	---		---	---	---				
Rubbleland, talus-----	---		---	---	---				
9252: Littletahoma, moist-----	A		---	---	---				
Burroughs, moist-----	A		---	---	---				

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9252: Mountwow, moist-----	A/D		cm	cm	cm				
		January	100	>200	---	---	None	---	None
		February	75	>200	---	---	None	---	None
		March	50	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	40	>200	---	---	None	---	None
		June	75	>200	---	---	None	---	None
		July	125	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Tatoosh, moist-----	D	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---
810 Unicornpeak-----	A/D		cm	cm	cm				
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9253: Mountwow, moist-----	A/D		cm	cm	cm				
		January	100	>200	---	---	None	---	None
		February	75	>200	---	---	None	---	None
		March	50	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	40	>200	---	---	None	---	None
		June	75	>200	---	---	None	---	None
		July	125	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None
Littletahoma, moist-----	A	---	---	---	---	---	---	---	---
Unicornpeak-----	A/D	January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
Burroughs, moist-----	A	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9253: Williwakas-----	A/D	January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None
9254: Chenuis, moist-----	A	---	---	---	---	---	---	---	---
		---	---	---	---	---	---	---	---
Sarvant, moist-----	A	---	---	---	---	---	---	---	---
Mountwow, moist-----	A/D	January	100	>200	---	---	None	---	None
		February	75	>200	---	---	None	---	None
		March	50	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	40	>200	---	---	None	---	None
		June	75	>200	---	---	None	---	None
		July	125	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		September	180	>200	---	---	None	---	None
		October	180	>200	---	---	None	---	None
		November	140	>200	---	---	None	---	None
		December	120	>200	---	---	None	---	None

Table 25.--Water Features--Continued

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding		
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
9255: Tatoosh-----	D	---	cm	cm	cm	---	---	---	---	
Mountwow-----	A/D	January February March April May June July August September October November December	100 70 30 10 30 30 50 130 180 180 140 120	>200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None None None None	---	None None None None None None None None None None None None
Rock outcrop-----	---	---	---	---	---	---	---	---	---	
9256: Chenuis-----	A	---	---	---	---	---	---	---	---	
Sarvant-----	A	---	---	---	---	---	---	---	---	
Tatoosh-----	D	---	---	---	---	---	---	---	---	
Rock outcrop-----	---	---	---	---	---	---	---	---	---	
Rubbleland, talus-----	---	---	---	---	---	---	---	---	---	
9257: Littletahoma-----	A	---	---	---	---	---	---	---	---	
Burroughs-----	A	---	---	---	---	---	---	---	---	

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
9257: Mount-wow-----	A/D		cm	cm	cm					
		January	100	>200	---					
		February	75	>200	---					
		March	50	>200	---					
		April	25	>200	---					
		May	40	>200	---					
		June	75	>200	---					
		July	125	>200	---					
		August	150	>200	---					
		September	180	>200	---					
		October	180	>200	---					
		November	140	>200	---					
		December	120	>200	---					
Tatoosh-----	D	---	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---	---
9258: Mount-wow-----	A/D		cm	cm	cm					
		January	100	>200	---					
		February	75	>200	---					
		March	50	>200	---					
		April	25	>200	---					
		May	40	>200	---					
		June	75	>200	---					
		July	125	>200	---					
		August	150	>200	---					
		September	180	>200	---					
		October	180	>200	---					
		November	140	>200	---					
		December	120	>200	---					
Littletahoma-----	A	---	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9258: Wahpenayo-----	B/D		cm	cm	cm				
		January	55	>200	---	---	None	---	None
		February	50	>200	---	---	None	---	None
		March	40	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	45	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		November	80	>200	---	---	None	---	None
		December	60	>200	---	---	None	---	None
Burroughs-----	A	---	---	---	---	---	---	---	---
Unicornpeak-----	A/D	January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None

## Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
9258: Williwakas-----	A/D		cm	cm	cm					
		January	0	>200	---	---	---	---	---	None
		February	0	>200	---	---	---	---	---	None
		March	0	>200	---	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	---	None
		July	10	>200	---	---	---	---	---	None
		August	20	>200	---	---	---	---	---	None
		September	30	>200	---	---	---	---	---	None
		October	20	>200	---	---	---	---	---	None
		November	10	>200	---	---	---	---	---	None
		December	0	>200	---	---	---	---	---	None
9259: Chenius-----	A	---	---	---	---	---	---	---	---	---
Sarvant-----	A	---	---	---	---	---	---	---	---	---
Mountwow-----	A/D		cm	cm	cm					
		January	100	>200	---	---	---	None	---	None
		February	75	>200	---	---	---	None	---	None
		March	50	>200	---	---	---	None	---	None
		April	25	>200	---	---	---	None	---	None
		May	40	>200	---	---	---	None	---	None
		June	75	>200	---	---	---	None	---	None
		July	125	>200	---	---	---	None	---	None
		August	150	>200	---	---	---	None	---	None
		September	180	>200	---	---	---	None	---	None
		October	180	>200	---	---	---	None	---	None
		November	140	>200	---	---	---	None	---	None
		December	120	>200	---	---	---	None	---	None

## Soil Survey of Mount Rainier National Park, Washington

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9259: Unicornpeak-----	A/D		cm	cm	cm				
		January	110	>200	---	---	None	---	None
		February	100	>200	---	---	None	---	None
		March	75	>200	---	---	None	---	None
		April	50	>200	---	---	None	---	None
		May	60	>200	---	---	None	---	None
		June	60	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		August	150	>200	---	---	None	---	None
		November	150	>200	---	---	None	---	None
		December	130	>200	---	---	None	---	None
Tatoosh-----	D	---	---	---	---	---	---	---	---
Williwakas-----	A/D								
		January	0	>200	---	---	---	---	None
		February	0	>200	---	---	---	---	None
		March	0	>200	---	---	---	---	None
		April	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		May	0	>200	1-5	Long (7 to 30 days)	Frequent	---	None
		June	5	>200	0-2	Long (7 to 30 days)	Frequent	---	None
		July	10	>200	---	---	---	---	None
		August	20	>200	---	---	---	---	None
		September	30	>200	---	---	---	---	None
		October	20	>200	---	---	---	---	None
		November	10	>200	---	---	---	---	None
		December	0	>200	---	---	---	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
9260: Mount-wow, alpine-----	A/D		cm	cm	cm					
		January	100	>200	---					
		February	75	>200	---					
		March	50	>200	---					
		April	25	>200	---					
		May	40	>200	---					
		June	75	>200	---					
		July	125	>200	---					
		August	150	>200	---					
		September	180	>200	---					
		October	180	>200	---					
		November	140	>200	---					
		December	120	>200	---					
Chenuis, alpine-----	A		---	---	---					
Meany-----	A/D		---	---	---					
		January	0	>200	---					
		February	0	>200	---					
		March	0	>200	---					
		April	0	>200	---					
		May	0	>200	---					
		June	0	>200	---					
		July	5	>200	---					
		August	20	>200	---					
		September	20	>200	---					
		October	20	>200	---					
		November	10	>200	---					
		December	0	>200	---					

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			cm	cm	cm				
9260: Riverwash-----	---	January	30	>200	---	---	None	---	---
		February	30	>200	---	---	None	---	---
		March	30	>200	---	---	None	---	---
		April	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		May	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		June	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		July	30	>200	---	---	None	---	---
		August	30	>200	---	---	None	---	---
		September	30	>200	---	---	None	---	---
		October	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		November	30	>200	---	---	None	Brief (2 to 7 days)	Frequent
		December	30	>200	---	---	None	---	---
820 Wahpenayo, alpine-----	B/D	January	55	>200	---	---	None	---	None
		February	50	>200	---	---	None	---	None
		March	40	>200	---	---	None	---	None
		April	25	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	45	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		November	80	>200	---	---	None	---	None
		December	60	>200	---	---	None	---	None
		January	55	>200	---	---	None	---	None
		February	50	>200	---	---	None	---	None
		March	40	>200	---	---	None	---	None
9261: Wahpenayo, alpine-----	B/D	April	25	>200	---	---	None	---	None
		May	30	>200	---	---	None	---	None
		June	45	>200	---	---	None	---	None
		July	80	>200	---	---	None	---	None
		November	80	>200	---	---	None	---	None
		December	60	>200	---	---	None	---	None
		January	55	>200	---	---	---	---	---
		February	50	>200	---	---	---	---	---
		March	40	>200	---	---	---	---	---
		April	25	>200	---	---	---	---	---
		May	30	>200	---	---	---	---	---
		June	45	>200	---	---	---	---	---
Burroughs, alpine-----	A	July	80	>200	---	---	---	---	---
		November	80	>200	---	---	---	---	---
		December	60	>200	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency	
9261: Mount-wow, alpine-----	A/D		cm	cm	cm					
		January	100	>200	---					
		February	75	>200	---					
		March	50	>200	---					
		April	25	>200	---					
		May	40	>200	---					
		June	75	>200	---					
		July	125	>200	---					
		August	150	>200	---					
		September	180	>200	---					
		October	180	>200	---					
		November	140	>200	---					
		December	120	>200	---					
Chenuis, alpine-----	A		---	---	---					
Meany-----	A/D		---	---	---					
		January	0	>200	---					
		February	0	>200	---					
		March	0	>200	---					
		April	0	>200	---					
		May	0	>200	---					
		June	0	>200	---					
		July	5	>200	---					
		August	20	>200	---					
		September	20	>200	---					
		October	20	>200	---					
		November	10	>200	---					
		December	0	>200	---					

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9262: Sarvant, alpine-----	A	---	cm	cm	cm	---	---	---	---
Wahpenayo, alpine-----	B/D	January February March April May June July November December	55 50 40 25 30 45 80 80 60	>200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None	None None None None None None None None None
Mountwow, alpine-----	A/D	January February March April May June July August September October November December	100 75 50 25 40 75 125 150 180 180 140 120	>200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None None None None	None None None None None None None None None None None None
Chenuis, alpine-----	A	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---
Tatoosh, alpine-----	D	---	---	---	---	---	---	---	---
9263: Tamanos-----	A	---	---	---	---	---	---	---	---
Glaciers-----	---	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9993: Rubbleland, talus-----	---		cm	cm	cm	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---
Sluiskin-----	D	---	---	---	---	---	---	---	---
Summerland, cold-----	A	---	---	---	---	---	---	---	---
9994: Rubbleland, till-----	---	---	---	---	---	---	---	---	---
Glacierisland-----	A	---	---	---	---	---	---	---	---
Wonderland-----	A/D	January February March April May June July August September October November December	100 75 50 25 40 75 125 150 180 180 140 120	>200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200 >200	---	---	---	None None None None None None None None None None None None	None None None None None None None None None None None None
Sheepskull-----	A	---	---	---	---	---	---	---	---
9996: Glaciers-----	---	---	---	---	---	---	---	---	---
Rock outcrop-----	---	---	---	---	---	---	---	---	---

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
9996: Tatoosh, volcanic cone-----	D		cm	cm	cm	-----	-----	-----	-----
W: Water-----			-----	-----	-----	-----	-----	-----	-----

Table 26.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that data were not populated. Components with no data in all columns are not shown. Depths are in metric.)

Map symbol and soil name	Kind	Restrictive layer			Potential for frost action	Risk of corrosion	
		Depth to top	Thickness	Hardness		Uncoated steel	Concrete
6100: Riverwash-----	---	---	---	---	---	---	---
Comet-----	---	---	---	---	High	Moderate	High
Water-----	---	---	---	---	---	---	---
6101: Comet-----	---	---	---	---	High	Moderate	High
Carbon-----	---	---	---	---	High	Moderate	Moderate
Sunbeam-----	---	---	---	---	High	Moderate	Moderate
Riverwash-----	---	---	---	---	---	---	---
6110: Tokaloo-----	---	---	---	---	High	Moderate	High
Kautz-----	---	---	---	---	High	Moderate	High
Sunbeam-----	---	---	---	---	High	Moderate	Moderate
6120: Kautz-----	---	---	---	---	High	Moderate	High
Tokaloo-----	---	---	---	---	High	Moderate	High
Sunbeam-----	---	---	---	---	High	Moderate	Moderate
Goldenlakes-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
6125: Tokaloo-----	---	---	---	---	High	Moderate	High
Kautz-----	---	---	---	---	High	Moderate	High
Goldenlakes-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Sunbeam-----	---	---	---	---	High	Moderate	Moderate
Ingraham-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
7100: Goldenlakes-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Ingraham-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Kautz-----	---	---	---	---	High	Moderate	High
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
7110: Kautz-----	---	---	---	---	High	Moderate	High
Goldenlakes-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Tokaloo-----	---	---	---	---	High	Moderate	High
Ingraham-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Sunbeam-----	---	---	---	---	High	Moderate	Moderate
7120: Kautz-----	---	---	---	---	High	Moderate	High
Tokaloo-----	---	---	---	---	High	Moderate	High
Goldenlakes-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Ingraham-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Sunbeam-----	---	---	---	---	High	Moderate	Moderate
7125: Goldenlakes-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Kautz-----	---	---	---	---	High	Moderate	High
Ingraham-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Tokaloo-----	---	---	---	---	High	Moderate	High
Sunbeam-----	---	---	---	---	High	Moderate	Moderate

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		cm	cm				
8100:							
Riverwash-----	---	---	---	---	---	---	---
Flett-----	---	---	---	---	High	Moderate	High
Narada-----	---	---	---	---	High	Moderate	High
Water-----	---	---	---	---	---	---	---
8101:							
Flett-----	---	---	---	---	High	Moderate	High
Narada-----	---	---	---	---	High	Moderate	High
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Riverwash-----	---	---	---	---	---	---	---
8110:							
Vantrump-----	---	---	---	---	High	Moderate	Moderate
Laughingwater-----	---	---	---	---	High	Moderate	Moderate
Longmire-----	---	---	---	---	High	Moderate	High
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Ghost, warm-----	---	---	---	---	High	High	High
8120:							
Longmire-----	---	---	---	---	High	Moderate	High
Laughingwater-----	---	---	---	---	High	Moderate	Moderate
Vantrump-----	---	---	---	---	High	Moderate	Moderate
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Arahustan-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
8125:							
Vantrump-----	---	---	---	---	High	Moderate	Moderate
Laughingwater-----	---	---	---	---	High	Moderate	Moderate

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
8125: Longmire-----	---	---	---	---	High	Moderate	High
Arahustan-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Ohanapecosh-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
8130: Summerland-----	---	---	---	---	High	Moderate	High
Longmire-----	---	---	---	---	High	Moderate	High
Vantrump-----	---	---	---	---	High	Moderate	Moderate
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
8150: Ghost, warm-----	---	---	---	---	High	High	High
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Laughingwater-----	---	---	---	---	High	Moderate	Moderate
Vantrump-----	---	---	---	---	High	Moderate	Moderate
Water-----	---	---	---	---	---	---	---
8200: Riverwash-----	---	---	---	---	---	---	---
Flett, cold-----	---	---	---	---	High	Moderate	High
Water-----	---	---	---	---	---	---	---
8201: Mysticlake-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate
Ghost-----	---	---	---	---	High	High	High
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		cm	cm				
8203: Glacierisland-----	---	---	---	---	High	Moderate	Moderate
Sheepskull-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	Moderate
Sluiskin-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	Moderate
Wonderland-----	---	---	---	---	High	Moderate	Moderate
8210: Mysticlake-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Tipsoo-----	---	---	---	---	High	High	High
Ghost-----	---	---	---	---	High	High	High
8211: Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Mysticlake-----	---	---	---	---	High	High	Moderate
Williwakas-----	---	---	---	---	High	High	Moderate
Ipsut-----	Lithic bedrock	25-50	---	Indurated	High	High	High
Mountwow-----	---	---	---	---	High	High	Moderate
8220: Tipsoo-----	---	---	---	---	High	High	High
Unicornpeak-----	---	---	---	---	High	High	High
Mysticlake-----	---	---	---	---	High	High	Moderate
Williwakas-----	---	---	---	---	High	High	Moderate
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
8225: Mysticlake-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
8225: Tipsoo-----	---	---	---	---	High	High	High
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Ipsut-----	Lithic bedrock	25-50	---	Indurated	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate
8230: Summerland, cold-----	---	---	---	---	High	Moderate	High
Tipsoo-----	---	---	---	---	High	High	High
Wonderland-----	---	---	---	---	High	Moderate	Moderate
Glacierisland-----	---	---	---	---	High	Moderate	Moderate
8250: Ghost-----	---	---	---	---	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate
Mountwow, moist-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Water-----	---	---	---	---	---	---	---
8251: Mountwow, moist-----	---	---	---	---	High	High	Moderate
Williwakas-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Ghost-----	---	---	---	---	High	High	High
8252: Mountwow, moist-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
8252: Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
8255: Ghost-----	---	---	---	---	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate
Mountwow-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Water-----	---	---	---	---	---	---	---
8256: Mountwow-----	---	---	---	---	High	High	Moderate
Williwakas-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Wahpenayo-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Ghost-----	---	---	---	---	High	High	High
8257: Wahpenayo-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Mountwow-----	---	---	---	---	High	High	Moderate
Williwakas-----	---	---	---	---	High	High	Moderate
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Unicornpeak-----	---	---	---	---	High	High	High
9100: Arahustan-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Ohanapecosh-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Longmire-----	---	---	---	---	High	Moderate	High

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
9100: Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Vantrump-----	---	---	---	---	High	Moderate	Moderate
9101: Ohanapecosh-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Arahustan-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Summerland-----	---	---	---	---	High	Moderate	High
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Rubbleland, talus-----	---	---	---	---	---	---	---
9110: Longmire-----	---	---	---	---	High	Moderate	High
Arahustan-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Ohanapecosh-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Vantrump-----	---	---	---	---	High	Moderate	Moderate
9120: Longmire-----	---	---	---	---	High	Moderate	High
Arahustan-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High
Vantrump-----	---	---	---	---	High	Moderate	Moderate
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Ohanapecosh-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
9125: Longmire-----	---	---	---	---	High	Moderate	High
Arahustan-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	High

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
9125: Ohanapecohsh-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	High
Vantrump-----	---	---	---	---	High	Moderate	Moderate
Frogheaven-----	---	---	---	---	High	Moderate	Moderate
Laughingwater-----	---	---	---	---	High	Moderate	Moderate
9200: Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Ipsut-----	Lithic bedrock	25-50	---	Indurated	High	High	High
Tipsoo-----	---	---	---	---	High	High	High
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Unicornpeak-----	---	---	---	---	High	High	High
9201: Sluiskin-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	Moderate
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Summerland, cold-----	---	---	---	---	High	Moderate	High
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Rubbleland, talus-----	---	---	---	---	---	---	---
9210: Tipsoo-----	---	---	---	---	High	High	High
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Ipsut-----	Lithic bedrock	25-50	---	Indurated	High	High	High
Mysticlake-----	---	---	---	---	High	High	Moderate
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Williwakas-----	---	---	---	---	High	High	Moderate

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		cm	cm				
9220:							
Tipsoo-----	---	---	---	---	High	High	High
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Mysticlake-----	---	---	---	---	High	High	Moderate
Ipsut-----	Lithic bedrock	25-50	---	Indurated	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate
9225:							
Owyhigh-----	Lithic bedrock	50-100	---	Indurated	High	High	High
Tipsoo-----	---	---	---	---	High	High	High
Ipsut-----	Lithic bedrock	25-50	---	Indurated	High	High	High
Mysticlake-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate
9250:							
Burroughs, moist-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Littletahoma, moist-----	---	---	---	---	High	High	Moderate
Tatoosh, moist-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate
Mountwow, moist-----	---	---	---	---	High	High	Moderate
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
9251:							
Sarvant, moist-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Chenuis, moist-----	---	---	---	---	High	High	Moderate
Tatoosh, moist-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Rubbleland, talus-----	---	---	---	---	---	---	---

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		cm	cm				
9252:							
Littletahoma, moist-----	---	---	---	---	High	High	Moderate
Burroughs, moist-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Mountwow, moist-----	---	---	---	---	High	High	Moderate
Tatoosh, moist-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Unicornpeak-----	---	---	---	---	High	High	High
9253:							
Mountwow, moist-----	---	---	---	---	High	High	Moderate
Littletahoma, moist-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Burroughs, moist-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Williwakas-----	---	---	---	---	High	High	Moderate
9254:							
Chenuis, moist-----	---	---	---	---	High	High	Moderate
Sarvant, moist-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Mountwow, moist-----	---	---	---	---	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Tatoosh, moist-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate
Williwakas-----	---	---	---	---	High	High	Moderate
9255:							
Burroughs-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Littletahoma-----	---	---	---	---	High	High	Moderate
Tatoosh-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
9255: Mountwow-----	---	---	---	---	High	High	Moderate
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
9256: Chenuis-----	---	---	---	---	High	High	Moderate
Sarvant-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Tatoosh-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Rubbleland, talus-----	---	---	---	---	---	---	---
9257: Littletahoma-----	---	---	---	---	High	High	Moderate
Burroughs-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Mountwow-----	---	---	---	---	High	High	Moderate
Tatoosh-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
9258: Mountwow-----	---	---	---	---	High	High	Moderate
Littletahoma-----	---	---	---	---	High	High	Moderate
Wahpenayo-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Burroughs-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Unicornpeak-----	---	---	---	---	High	High	High
Williwakas-----	---	---	---	---	High	High	Moderate
9259: Chenuis-----	---	---	---	---	High	High	Moderate
Sarvant-----	Lithic bedrock	50-100	---	Indurated	High	High	Moderate
Mountwow-----	---	---	---	---	High	High	Moderate

Table 26.--Soil Features--Continued

Table 26.--Soil Features--Continued

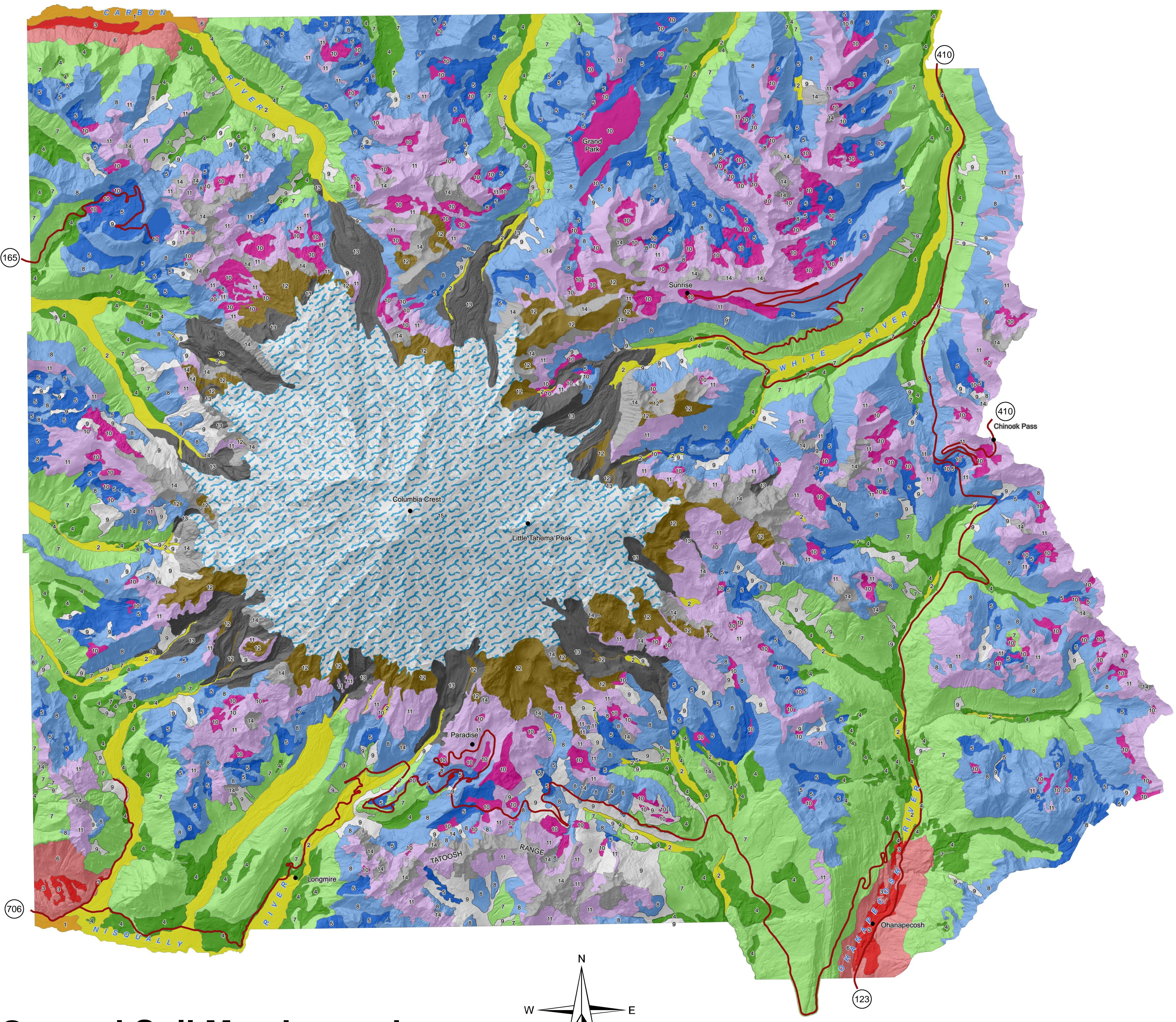
Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		cm	cm				
9993:							
Rubbleland, talus-----	---	---	---	---	---	---	---
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Sluiskin-----	Lithic bedrock	25-50	---	Indurated	High	Moderate	Moderate
Summerland, cold-----	---	---	---	---	High	Moderate	High
9994:							
Rubbleland, till-----	---	---	---	---	---	---	---
Glacierisland-----	---	---	---	---	High	Moderate	Moderate
Wonderland-----	---	---	---	---	High	Moderate	Moderate
Sheepskull-----	Lithic bedrock	50-100	---	Indurated	High	Moderate	Moderate
9996:							
Glaciers-----	---	---	---	---	---	---	---
Rock outcrop-----	Lithic bedrock	0	---	Indurated	---	---	---
Tatoosh, volcanic cone-----	Lithic bedrock	25-50	---	Indurated	High	High	Moderate
W:							
Water-----	---	---	---	---	---	---	---

# Accessibility Statement

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## General Soil Map Legend

### Soils of Flood Plains and Terraces

- █ 1 - Riverwash-Comet-Carbon
- █ 2 - Flett-Riverwash-Narada

The units on this legend are described in the manuscript under the heading "General Soil Map Units".

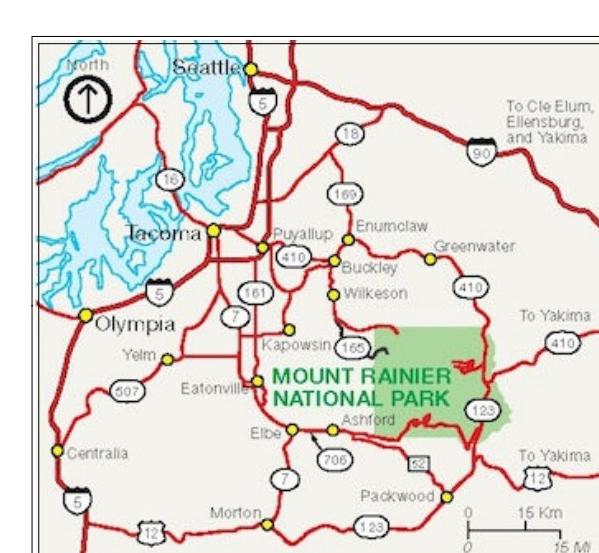
This map was produced at a scale of 1:63,360 and is formatted for a 24" x 36" page. Compiled 2014, Inset location map images provided by the National Park Service.

0 2 4 8 Kilometers

### Soils of Coniferous Mountain Valleys

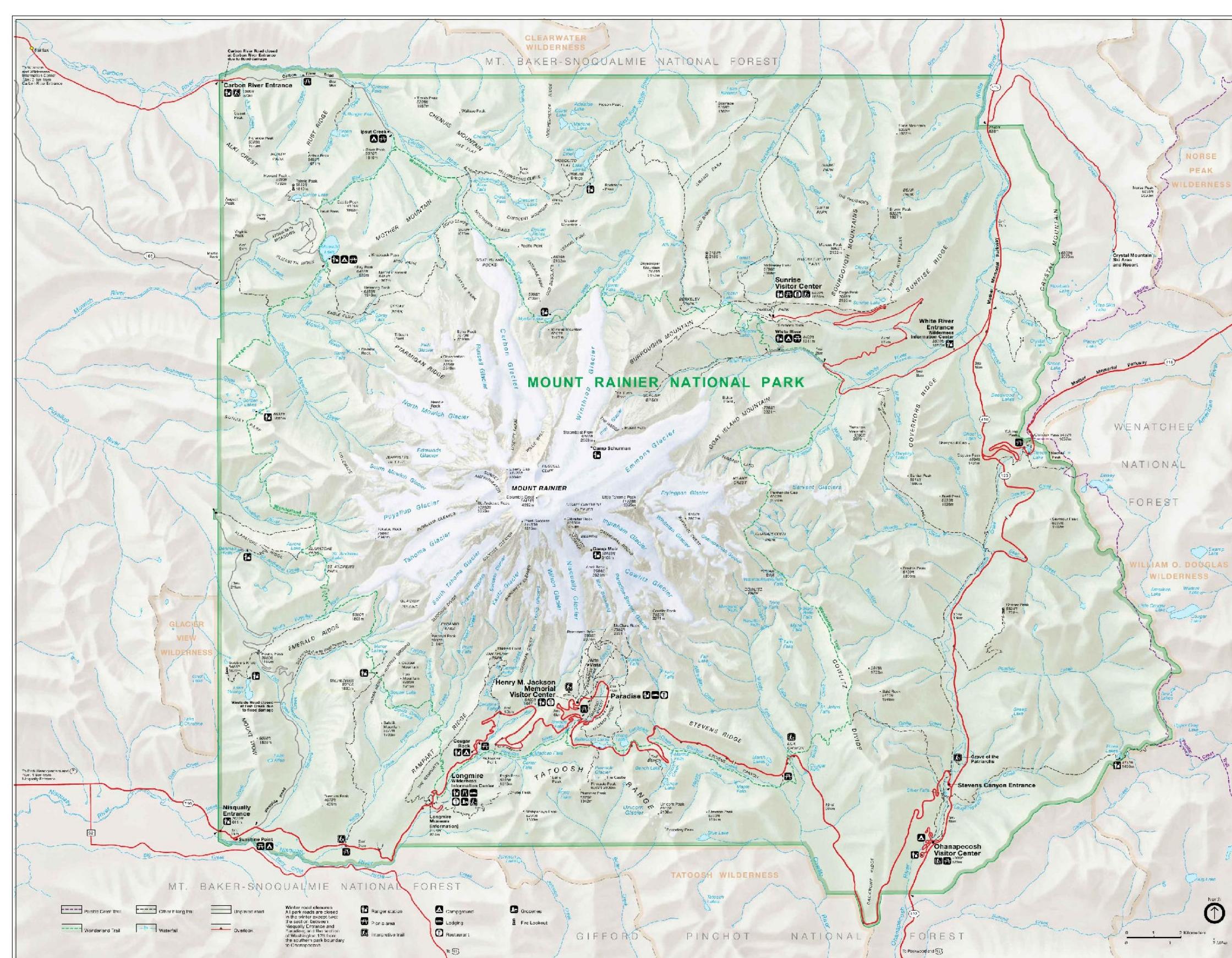
- █ 3 - Tokaloo-Kautz-Sunbeam
- █ 4 - Laughingwater-Longmire-Vantrump
- █ 5 - Mysticlake-Unicornpeak-Tipsoo

0 2 4 8 Miles



### Soils of Coniferous Mountain Slopes

- █ 6 - Kautz-Goldenlakes-Tokaloo
- █ 7 - Longmire-Arahustan
- █ 8 - Owyhigh-Tipsoo



### Soils of Deciduous Mountain Slopes

- █ 9 - Summerland

### Soils that Formed under Subalpine Meadows

- █ 10 - Mountwow-Williwakas-Wahpenayo
- █ 11 - Burroughs-Chenuis-Sarvant

### Soils of Recently Deglaciated Terrain

- █ 12 - Wahpenayo-Sarvant-Mountwow, Alpine Phases
- █ 13 - Glacierisland-Tamanos-Rubbleland, Till

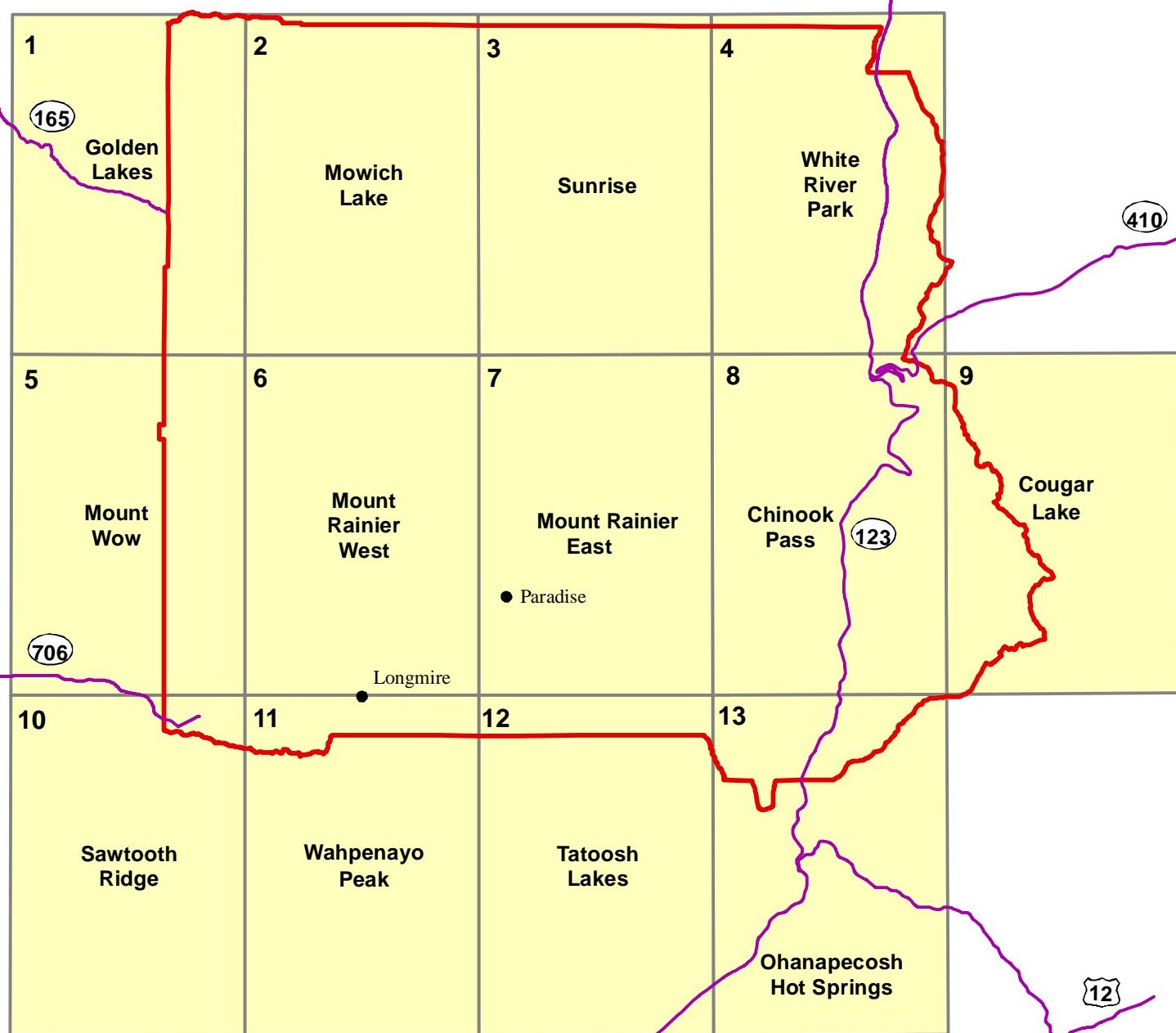
### Areas that are Dominantly Miscellaneous Land Types

- █ 14 - Rubbleland, Talus-Rock Outcrop
- █ 15 - Glaciers-Rock Outcrop

# Index to Map Sheets

## Mount Rainier National Park, WA

410



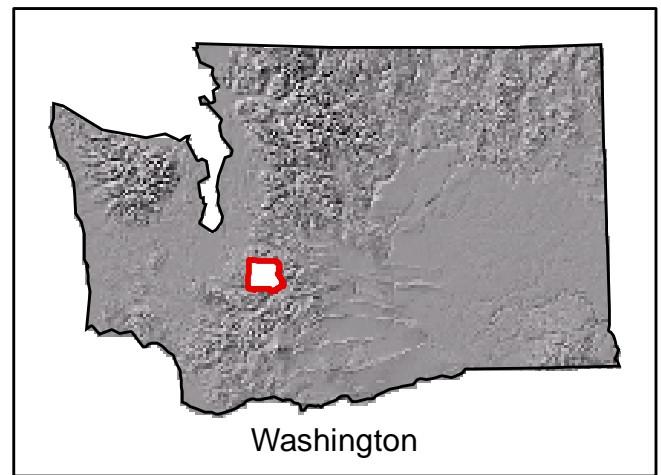
12

Randle

Cora

Packwood

0 5 10  
Miles



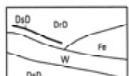
SOIL LEGEND

Symbol	Name
6100	Riverwash-Comet complex, 0 to 15 percent slopes
6101	Comet-Carbon complex, 0 to 20 percent slopes
6110	Tokaloo-Kautz-Sunbeam complex, 0 to 20 percent slopes
6120	Kautz-Tokaloo-Sunbeam complex, 5 to 35 percent slopes
6125	Tokaloo-Kautz-Goldenlakes complex, 0 to 65 percent slopes
7100	Goldenlakes-Ingraham-Kautz complex, 35 to 100 percent slopes
7110	Kautz-Goldenlakes complex, 35 to 100 percent slopes
7120	Kautz-Tokaloo-Goldenlakes complex, 25 to 65 percent slopes
7125	Goldenlakes-Kautz-Ingraham complex, 20 to 65 percent slopes
8100	Riverwash-Flett complex, 0 to 25 percent slopes
8101	Flett-Narada complex, 0 to 25 percent slopes
8110	Vantrump-Laughingwater-Longmire complex, 0 to 35 percent slopes
8120	Longmire-Laughingwater-Vantrump complex, 5 to 65 percent slopes
8125	Vantrump-Laughingwater-Longmire complex, 10 to 65 percent slopes
8130	Summerland-Longmire complex, 15 to 100 percent slopes
8150	Ghost-Frogheaven complex, 0 to 10 percent slopes
8200	Riverwash-Flett, cold complex, 5 to 50 percent slopes
8201	Mysticlake-Unicornpeak-Williwakas complex, 0 to 40 percent slopes
8203	Glacierisland-Sheepskull-Sluiskin complex, 10 to 100 percent slopes
8210	Mysticlake-Unicornpeak-Tipsoo complex, 5 to 40 percent slopes
8211	Owyhigh-Mysticlake-Williwakas complex, 0 to 50 percent slopes
8220	Tipsoo-Unicornpeak-Mysticlake complex, 10 to 55 percent slopes
8225	Mysticlake-Unicornpeak-Tipsoo complex, 10 to 55 percent slopes
8230	Summerland-Tipsoo complex, 15 to 100 percent slopes
8250	Ghost-Williwakas-Mountwow, moist complex, 0 to 20 percent slopes
8251	Mountwow, moist-Williwakas-Unicornpeak complex, 0 to 40 percent slopes
8252	Mountwow-Unicornpeak-Williwakas complex, 0 to 55 percent slopes
8255	Ghost-Williwakas-Mountwow complex, 0 to 20 percent slopes
8256	Mountwow-Williwakas-Unicornpeak complex, 0 to 30 percent slopes
8257	Wahpenayo-Mountwow-Williwakas complex, 0 to 45 percent slopes
9100	Arahustan-Ohanapecosh-Longmire complex, 15 to 100 percent slopes
9101	Ohanapecosh-Arahustan-Summerland complex, 20 to 100 percent slopes
9110	Longmire-Arahustan complex, 35 to 100 percent slopes
9120	Longmire-Arahustan-Vantrump complex, 20 to 65 percent slopes
9125	Longmire-Arahustan-Ohanapecosh complex, 15 to 65 percent slopes
9200	Owyhigh-Ipsut-Tipsoo complex, 25 to 100 percent slopes
9201	Sluiskin-Owyhigh-Summerland complex, 25 to 100 percent slopes
9210	Tipsoo-Owyhigh complex, 35 to 100 percent slopes
9220	Tipsoo-Owyhigh-Mysticlake complex, 20 to 65 percent slopes
9225	Owyhigh-Tipsoo-Ipsut complex, 15 to 65 percent slopes
9250	Burroughs-Littletahoma-Tatoosh, moist complex, 15 to 100 percent slopes
9251	Sarvant-Chenuis-Tatoosh complex, 20 to 100 percent slopes
9252	Littletahoma-Burroughs-Mountwow, moist complex, 20 to 100 percent slopes
9253	Mountwow-Littletahoma-Unicornpeak complex, 10 to 65 percent slopes
9254	Chenuis-Sarvant-Mountwow, moist complex, 10 to 65 percent slopes
9255	Burroughs-Littletahoma-Tatoosh complex, 15 to 100 percent slopes
9256	Chenuis-Sarvant complex, 25 to 100 percent slopes
9257	Littletahoma-Burroughs-Mountwow complex, 15 to 100 percent slopes
9258	Mountwow-Littletahoma-Wahpenayo complex, 15 to 55 percent slopes
9259	Chenuis-Sarvant-Mountwow complex, 10 to 65 percent slopes
9260	Mountwow-Chenuis-Meany complex, 5 to 50 percent slopes
9261	Wahpenayo-Burroughs-Mountwow complex, 5 to 55 percent slopes
9262	Sarvant-Wahpenayo-Mountwow complex, 15 to 100 percent slopes
9263	Tamanos-Glaciers complex, 10 to 65 percent slopes
9993	Rubbleland, talus-Rock outcrop complex, 15 to 100 percent slopes
9994	Rubbleland, till-Glacierisland-Wonderland complex, 15 to 100 percent slopes
9996	Glaciers-Rock outcrop complex, 15 to 100 percent slopes
W	Water

CONVENTIONAL SYMBOLS LEGEND

SOIL SURVEY FEATURES

SOIL DELINEATIONS  
AND LABELS



ROAD EMBLEMS

Interstate	
Federal	
State	
Other	

CULTURAL FEATURES

National, state or province	
County or parish	
Reservation (national or state forest or park)	
Limit of soil survey (label)	
Public Land Survey System Section Boundary	



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database for Mount Rainier National Park, January, 2015.

The figure consists of three separate horizontal scale bars. The top bar is labeled 'Miles' and has tick marks at 0, 0.5, and 1. The middle bar is labeled 'Kilometers' and has tick marks at 0, 0.5, 1, 1.5, and 2. The bottom bar is labeled 'Feet' and has tick marks at 0 and 5,000. Each bar features a thick black segment with white dashed end caps.

Soil map delineations extending beyond the

# MOUNT RAINIER NATIONAL PARK, WASHINGTON

SHEET 1 OF 13

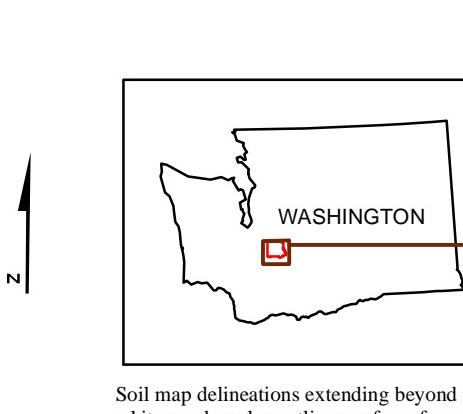


121°52'30"W

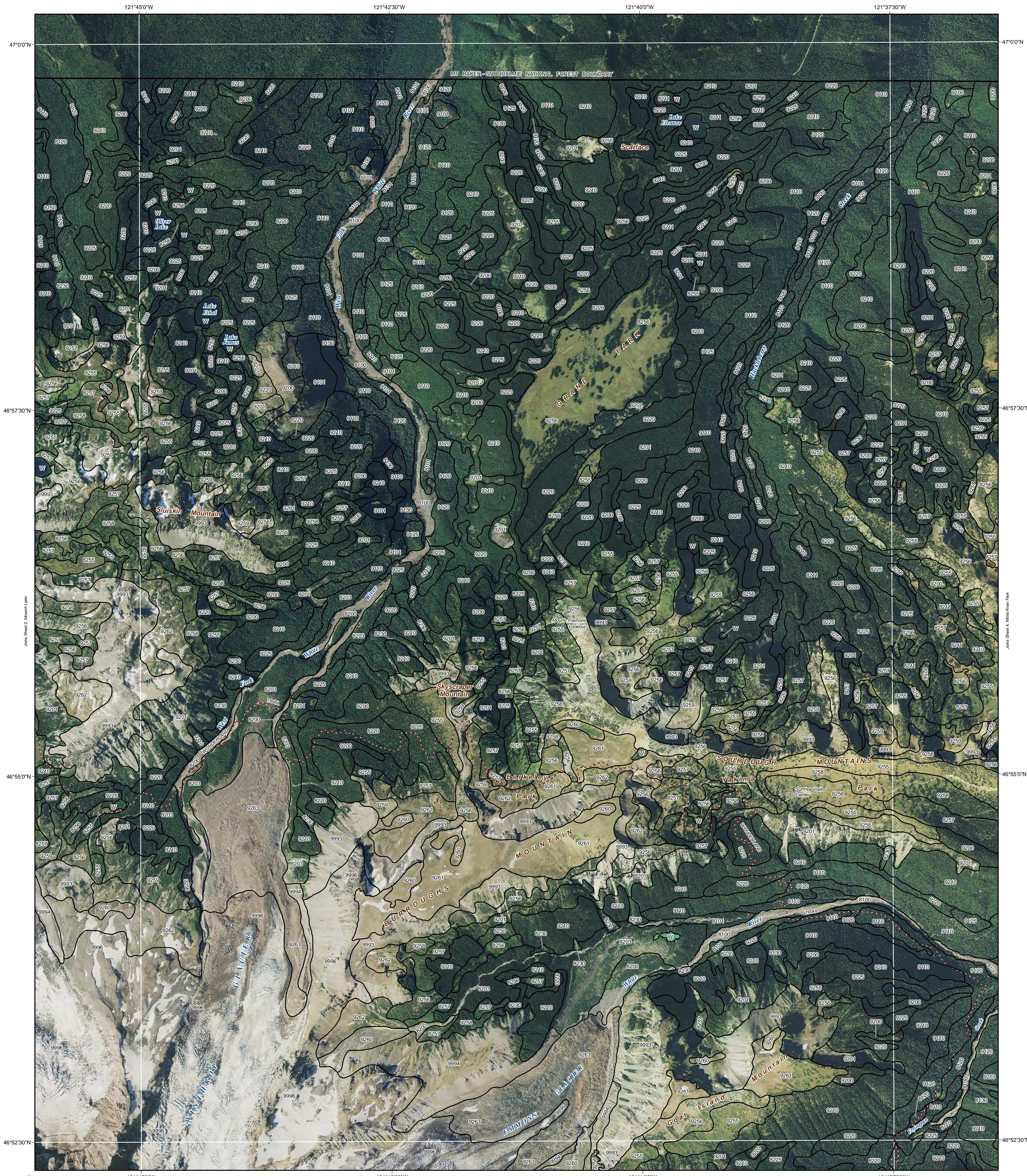


North American Datum of 1983 (NAD83). GRS-80 Spheroid.  
Universal Transverse Mercator, zone 10.

Joins Sheet 6, Mount Rainier West



Soil map delineations extending beyond white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid.  
Universal Transverse Mercator, zone 10.

2°30'W      Joins Sheet 7, Mount Rainier East      12



0                  0.5                  1

Miles



0                  0.5                  1                  1.5                  2

Kilometers

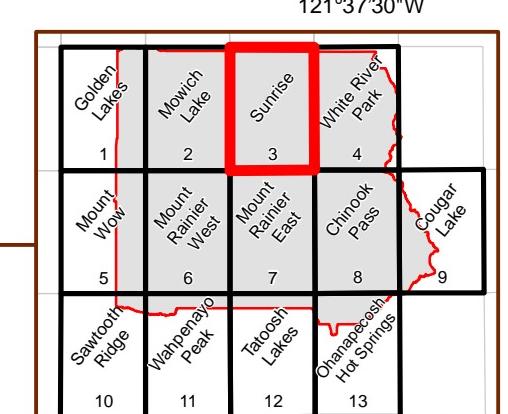


0                  5,000                  10

Feet

The map scale is approximately 1:24,000 when printed on a 24"x29" page

Soil map delineations extending beyond the white quadrangle neatline are for reference only and are included on adjacent map sheet



**MOUNT RAINIER  
NATIONAL PARK,  
WASHINGTON**



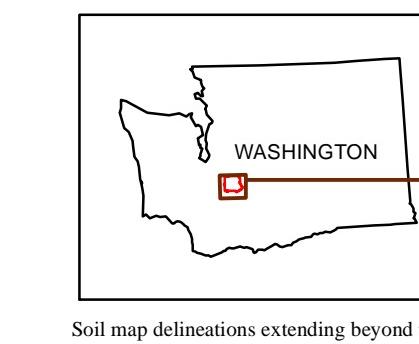
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North American Datum of 1983 (NAD83), GRS-80 Spheroid.  
Universal Transverse Mercator, zone 10.



Natural Resources  
Conservation Service

0 0.5 1 Miles  
0 0.5 1 1.5 2 Kilometers  
0 5.000 Feet  
The map scale is approximately 1:24,000 when printed on a 24"x29" page  
SCALE 1:24,000



Soil map delineations extending beyond the white quadrangle outline are for reference only and are included on adjacent map sheets.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

MOUNT RAINIER  
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WASHINGTON

SHEET 4 OF 13



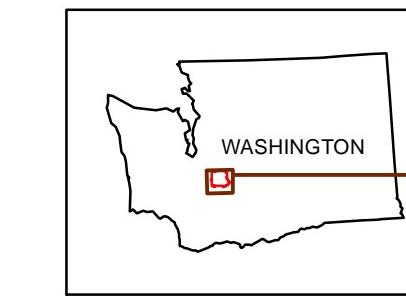
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North American Datum of 1983 (NAD83). GRS-80 Spheroid.  
Universal Transverse Mercator, zone 10.



Natural Resources  
Conservation Service

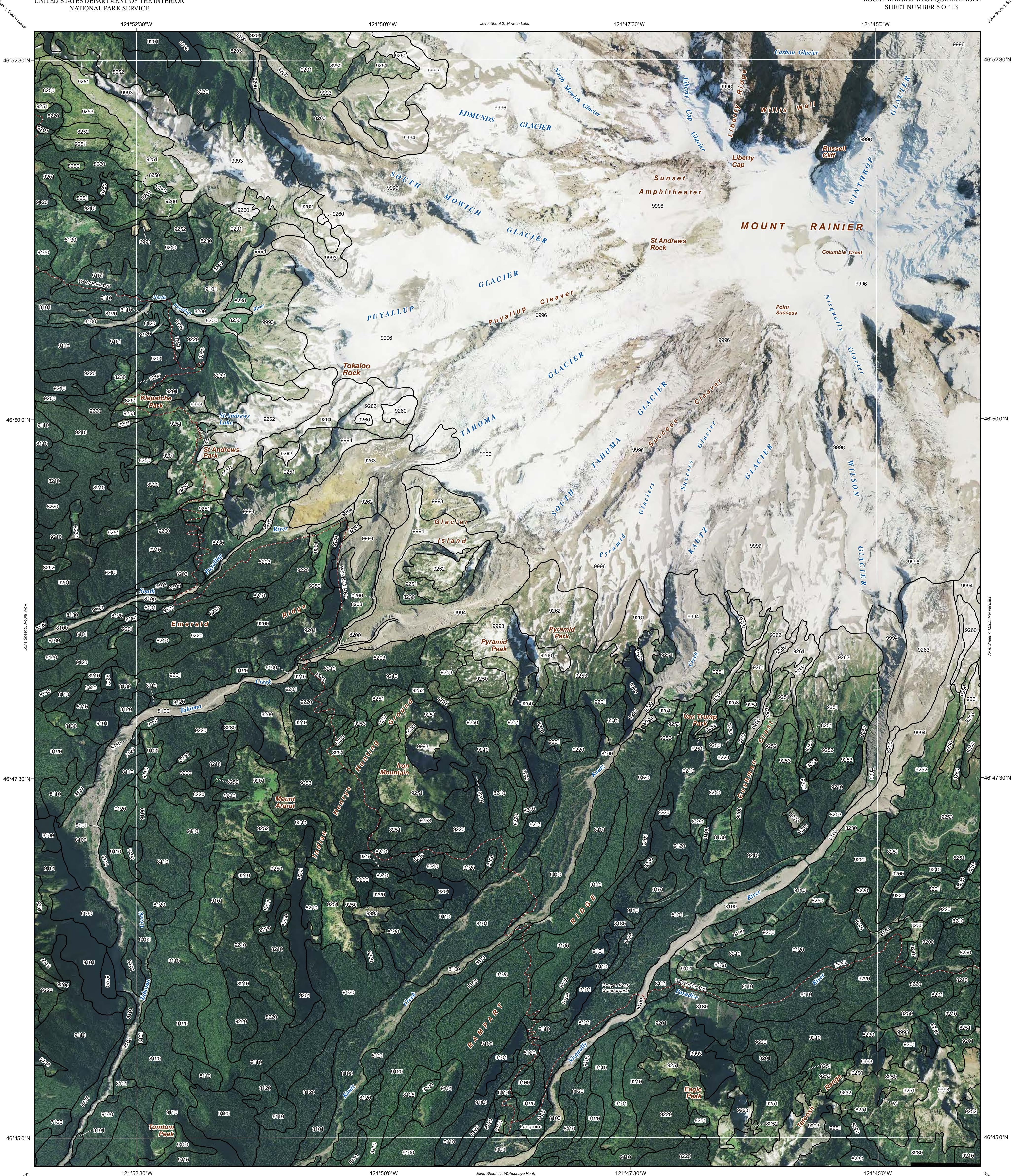
0 0.5 1 Miles  
0 0.5 1 1.5 2 Kilometers  
0 5.000 Feet  
The map scale is approximately 1:24,000 when printed on a 24"x29" page  
SCALE 1:24,000



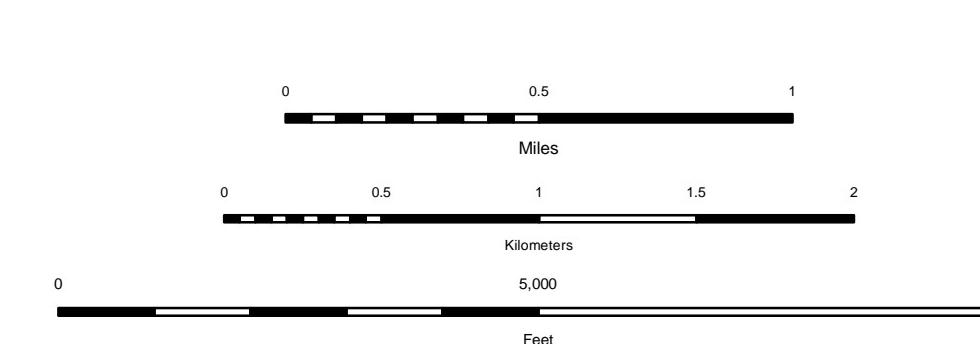
1	2	3	4
5	6	7	8
10	11	12	13
Sawtooth Ridge	Wallingford Park	Tacoma Lakeside	Olympic Peninsula
Glacier Lakes	Mount Rainier	Mount Rainier East	White River
Mt. Rainier	White River	Chimney Pass	Cougar Lake
W	W	W	W

MOUNT RAINIER  
NATIONAL PARK,  
WASHINGTON

SHEET 5 OF 13



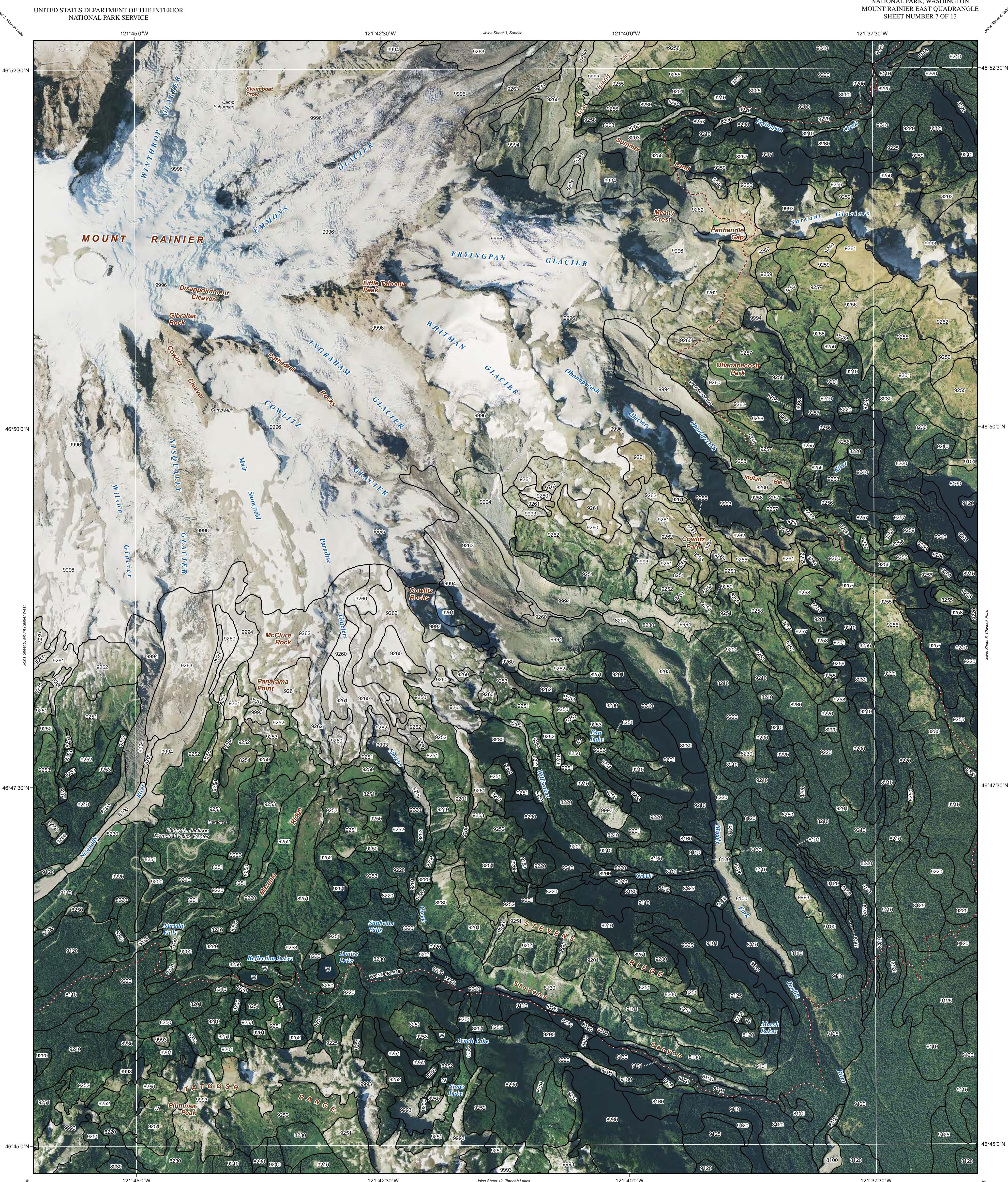
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, at the request of the U.S. Department of the Interior, National Park Service. Boundaries shown were prepared by the U.S. Department of Agriculture, Farm Service Agency, from 2013 aerial photography. Cultural information was acquired from USGS topo maps and other sources. Hydro information was derived from USGS topo maps and orthophotography. Park boundary information was obtained from the National Park Service - 2011. Soil information was derived from USDA/NRCS Soil Survey Geographic (SSURGO) database for Mount Rainier National Park, January, 2015.



1	2	3	4
5	6	7	8
10	11	12	13
Snowy Ridge	Glacier Lakes	Mowich Lake	White River
Glacier Park	Mount Rainier	Simola	Paradise
Glacier Peak	West	East	Longmire
Tacoma Lakes	Elwha River	Olympic Pass	Cougar Lake
Hoh Spring	Chimney Rock	Blue Lake	Wapato Lake

MOUNT RAINIER  
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SHEET 6 OF 13



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North American Datum of 1983 (NAD83). GRS-80 Spheroid.  
Universal Transverse Mercator, zone 10.



0 0.5 1 Miles  
0 0.5 1 1.5 2 Kilometers  
0 5.000 Feet  
The map scale is approximately 1:24,000 when printed on a 24"x29" page  
SCALE 1:24,000

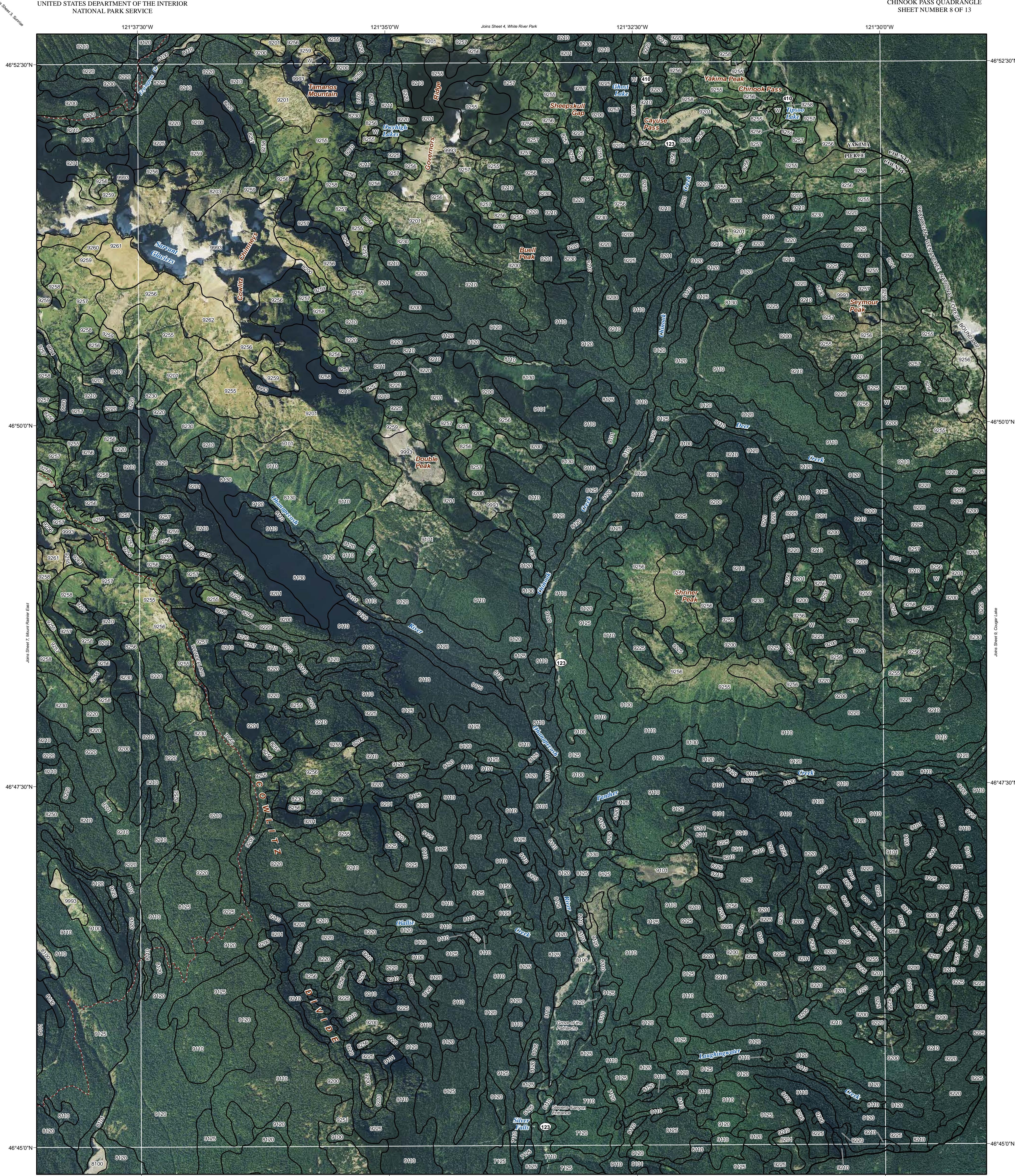


Soil map delineations extending beyond the white quadrangle outline are for reference only and are included on adjacent map sheets.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

MOUNT RAINIER  
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WASHINGTON  
SHEET 7 OF 13

JOINT SHEET 11, Tatoosh Lakes  
JOINT SHEET 12, Tatoosh Lakes  
JOINT SHEET 13, Ohanapecosh Hot Springs

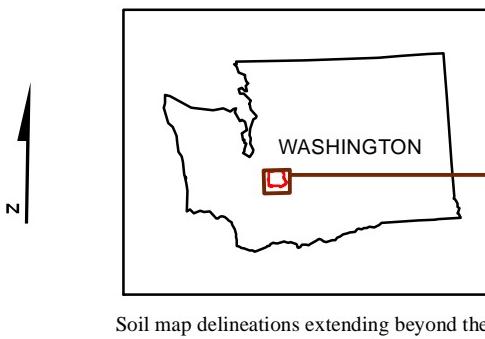
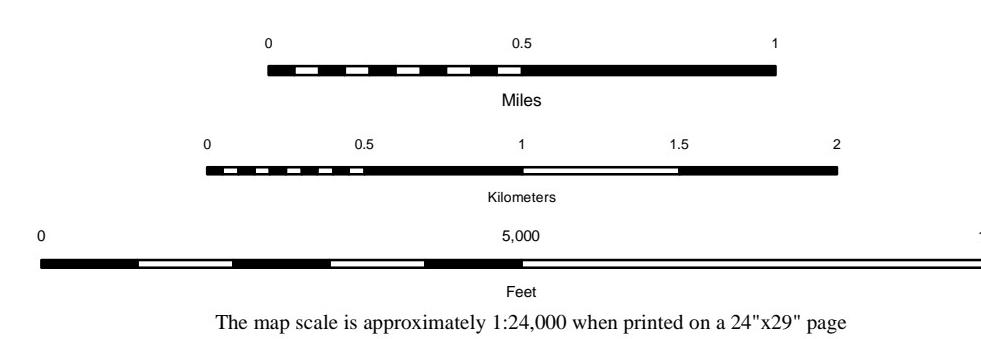


Jones Sheet 8, White River Park



Jones Sheet 13, Ohanapecosh Hot Springs

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1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

MOUNT RAINIER  
NATIONAL PARK,  
WASHINGTON

SHEET 9 OF 13



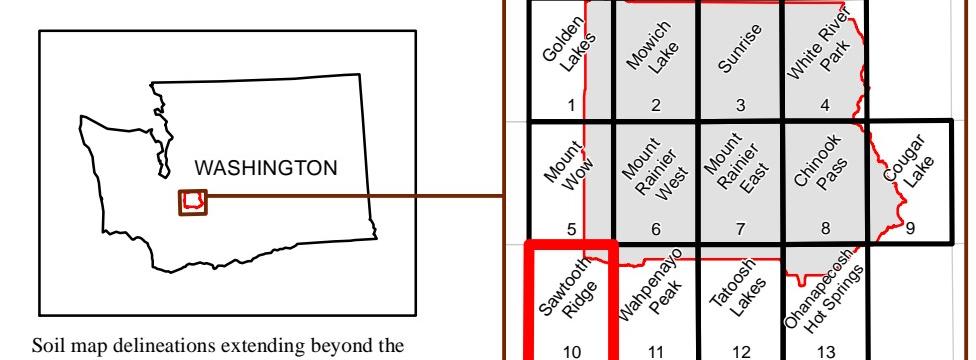
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database for Mount Rainier National Park, January, 2015.  
North American Datum of 1983 (NAD83). GRS-80 Spheroid.  
Universal Transverse Mercator, zone 10.

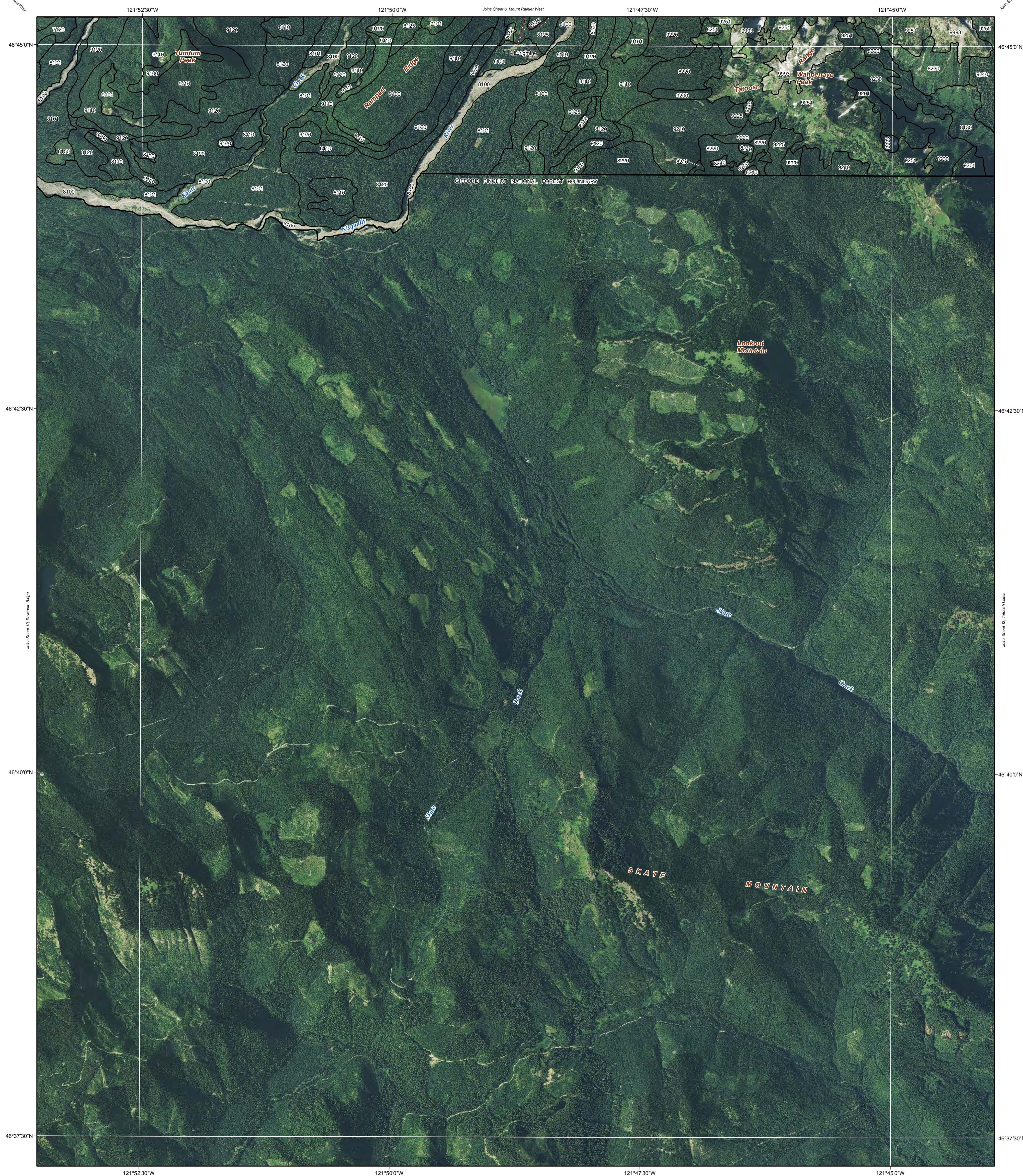
The figure consists of three separate horizontal scale bars. The top bar is labeled 'Miles' and has tick marks at 0, 0.5, and 1. The middle bar is labeled 'Kilometers' and has tick marks at 0, 0.5, 1, 1.5, and 2. The bottom bar is labeled 'Feet' and has tick marks at 0 and 5,000. Each scale bar features a thick black segment with white dashed end caps.

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SHEET 10 OF 13



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database for Mount Rainier National Park, January, 2015.

The figure consists of three horizontal scale bars. The top bar is labeled 'Miles' and has tick marks at 0, 0.5, and 1. The middle bar is labeled 'Kilometers' and has tick marks at 0, 0.5, 1, 1.5, and 2. The bottom bar is labeled 'Feet' and has tick marks at 0 and 5,000. Each bar has a thick black segment and a thin white segment with tick marks.

Soil map delineations extending beyond white quadrangle neatline are for reference.



Golden Lakes	Mowich Lake	Sunrise	White River Park
1	2	3	4
Mount Wow	Mount Rainier West	Mount Rainier East	Chinook Pass
5	6	7	8
Sawtooth Ridge	Wahperayo Peak	Tatosh Lakes	Onahapeets Hot Springs
10	11	12	13

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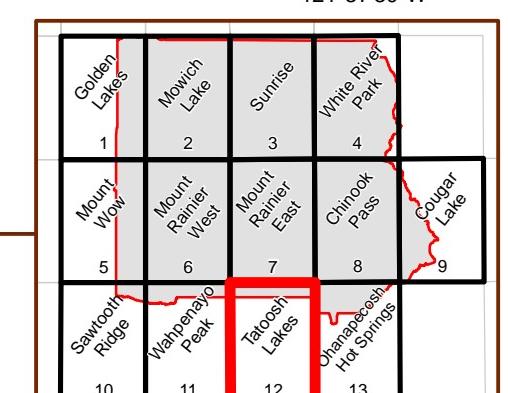


database for Mount Rainier National Park, January, 2015.

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Feet

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WASHINGTON

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